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[ORIGINAL COMMUNICATIONS.]

## ON TYPEWRITER RIBBONS.

BY ISIDOR FURST.

THE ever recurring query as to re-inking typewriter ribbons has been kindly referred to me by the editors of this Journal.

In treating of this question the second time, I shall endeavor to put whatever knowledge I possess regarding it into such form as will enable any person of average skill to make an ink suitable for any particular style of ribbon and apply it. I mean to illustrate the principles involved and how to meet the various requirements. My reason for doing this, rather than to give a specific formula to be followed in every instance, is that often an experimenter has already produced an ink which lacks only some correction to make it entirely suitable; for "there are many ways leading to Rome." Besides, an ink which may have been suitable at one time, may fail at another because used under different conditions, and once a person knows how to correct a defect, the ink may be made to answer all purposes.

The constituents of an ink for typewriter ribbons may be broadly divided into four elements: 1, the pigment; 2, the vehicle; 3, the corrigent; 4, the solvent. The elements will differ with the kind of ink desired, whether permanent or copying.

Permanent (Record) Ink.—Any finely divided, non-fading color may be used as the pigment, vaseline is the best vehicle, and wax the corrigent. In order to make the ribbon last a long time with one inking, as much pigment as feasible should be used. Suppose we wish to make black record ink. Take some vaseline, melt it on a slow fire or water-bath, and incorporate by constant stirring as much lampblack as it will take up without becoming granular. Take from the fire and allow it to cool. The ink is now practically finished, except if not entirely suitable on trial, it may be improved by adding the corrigent, wax, in small quantity. The ribbon should be charged with a very thin, evenly divided amount of ink. Hence the necessity of a solvent, in this instance a mixture of equal parts of petroleum benzin and rectified spirit of turpentine. In this mixture dissolve a sufficient amount of the solid ink by vigorous agitation to make a thin paint. Try your ink on one extremity of the ribbon; if too soft, add a little wax to make it harder; if too pale, add more coloring matter; if too hard, add more vaseline. If carefully applied to the ribbon, and the excess brushed off, the result will be satisfactory.

On the same principle other colors may be made into ink; but for delicate colors albolene and bleached wax should be the vehicle and corrigent, respectively.

The various printing inks may be used if properly corrected. They require the addition of vaseline to make them non-drying on the ribbon, and of some wax if found too soft. Where printing inks are available, they will be found to give excellent results if thus modified, as the pigment is well milled and finely divided. Even black cosmetic may be made to answer, by the addition of some lampblack to the solution in the mixture of benzin and turpentine.

After having thus explained the principles underlying the manufacture of permanent inks, I can pass more rapidly over the subject of copying inks, which is governed by the same general rules. Personally I am not in favor of the use of copying ink; first, because the print is liable to fade, smear, and become invisible; second, because it is unsuitable for legal and other documents of value; third, because it is easier to write two or more copies at one operation with manifold (carbon) paper than to make a second press copy after the writing is done.

For copying inks, aniline colors form the pigment; a mixture of about three parts of water and one part of glycerin, the vehicle; transparent soap (about one-fourth part), the corrigent; stronger alcohol (U. S. P.) (about six parts), the solvent. The desired aniline color will easily dissolve in the hot vehicle, soap will give the ink the necessary body and counteract the hygroscopic tendency of the glycerin, and in the stronger alcohol the ink will readily dissolve so that it can be applied in a finely divided state to the ribbon, where the evaporation of the alcohol will leave it in a thin film. There is little more to add. After your ink is made and tried—if too soft, add a little more soap; if too hard, a little more glycerin; if too pale, a little more pigment. Probably, printer's *copying* ink can be utilized here likewise, because every one now has the means to modify and correct it to make it answer the purpose. I have not tried it because I am opposed to copying inks.

Users of the typewriter should so set a fresh ribbon as to start at the edge nearest the operator, allowing it to run back and forth with the same adjustment until exhausted along that strip; then shift the ribbon forward the width of one letter, running until exhausted, and so on. Finally, when the whole ribbon is exhausted, the color will have been equably used up, and on re-inking the work will appear even in color, while it will look patchy if some of the old ink has been left here and there, and fresh ink applied over it.

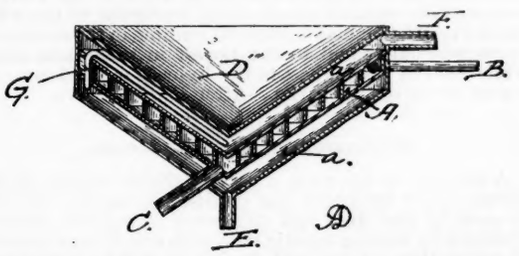
According to the directions here given, I have done nearly all the re-inking of my ribbons for more than seven years, and I am sure, if the reader should fail, it will be due to inattention on his part to some of the principles laid down.

NEW YORK, October 22d, 1888.

[ORIGINAL COMMUNICATION.]

## LLOYD'S CONDENSER.

PROF. J. U. LLOYD, of Cincinnati, has for over a year been perfecting a novel piece of apparatus which will undoubtedly come into general use and displace many of the less efficient contrivances heretofore used for condensing purposes. In devising the new condenser, Prof. Lloyd's idea was to bring the whole of the volume of hot vapor issuing from the mouth of the still at once in contact with a sufficient space of cold surface, to cause its complete condensation, with the least expenditure of cooling liquid, or of space occupied, and without any loss by the escape of uncondensed vapors. We have had the privilege of receiving periodical information regarding the gradual evolution of the apparatus, and are now enabled to describe it to our readers, as the patent has been issued a few weeks ago (U. S. Pat. 390,243, Oct. 2d, 1888).




In the accompanying drawing, the figure represents a vertical section of the condenser. The condensing chamber is preferably constructed of an inverted cone-shape, but may be made of any other desired form. At its upper end it is provided with an inlet, *B*, for the entrance of the hot vapors to be condensed, and at its lower part, with the outlet *C*, for the escape of the condensed liquid.

The interior of the condensing chamber may be perfectly smooth, but is preferably provided with a helically or other suitably arranged ribbon or flange extending from the top of the condensing chamber to the exit *C*.

An outer chamber or jacket, *D*, preferably corresponding to that of the condenser, surrounds the latter in such a manner as to leave a space, *a*, between the two for the circulation of a cold stream of water, which is supplied through the tube *E* projecting into said space, while the tube *F* serves as an exit for the heated water during the process of condensation.

The water chamber, at the under side of the condenser, connects with the corresponding chamber at the upper side by means of a tube, *G*, which establishes communication between the two. The stream of water passes from the lower chamber to the central part of the upper one, and there spreads out in a thin sheet over the upper surface of the condenser before passing out of the exit. Thus the outside surface of the vapor space is subjected to a continuous current of cold water, in a thin stratum, and a complete condensation of the vapor thus attained.

This new form of condenser is distinguished by its compactness and by its requiring so little space, while at the same time it presents to the vapors of volatile liquids a very large surface which is kept constantly cool. The condenser may be hung up out of the way, in any convenient place; all that is necessary is to connect the mouth of the still with it.

Prof. Lloyd informs us that he has substituted this form of condenser even for his largest old-style worms. It condenses vapors from a two-inch pipe as fast as they can be delivered. "The principle is: an extensive cooling surface, the condensing water being applied in a thin layer, the alcoholic (or other) vapors circulating on the other side of the water, and the escape of the condensed liquid at *C*, where the water is coldest."

The specifications of the patent are thus summarized:

"In a condensing apparatus, the cone-shaped cham-

ber *A*, having double walls, the interior of which is provided with a helically arranged ribbon or flange, and with suitable inlet and outlet pipes, *B* and *C*, in combination with an inclosing receptacle or jacket, *D*, also provided with inlet and outlet pipes *E* and *F*, and distributing pipe *G*, a space, *a*, being formed between the said chamber and its inclosing jacket, substantially in the manner and for the purpose specified."

### Effect of Hybridization on Cinchonas.

THE following is an abstract of a paper by Mr. D. Hooper, the quinologist of the India Government, read at the late meeting of the Brit. Pharm. Conference:

In the cinchona plantations of the Madras Government there are two well-defined species of cinchona, C. succirubra and C. officinalis—the bark from the former containing less quinine with more cinchonidine and cinchonine than that from the latter. Between these two species there are also many hybrids, and as the hybrids frequently assume the quicker growing character of the succirubra parent, it was interesting to ascertain how far and in what direction the hybridization affected the production of alkaloid. Fifty samples of succirubra bark examined yielded an average of 6.5 per cent of total alkaloid, and in 100 parts of this the quinine ranged from 17.6 to 26.8 parts, the average being 22.2 parts, whilst the average of the cinchonidine was 36.1 parts. Only five out of the fifty samples failed to comply with requirements of the British Pharmacopœia for bark, that it should yield between five and six per cent of total alkaloid, not less than half of which shall consist of quinine and cinchonidine. From fifty samples of C. officinalis bark, the average yield of total alkaloid was 5.25 per cent, but in 100 parts of this the quinine ranged from 48.2 to 62.1 parts, average 55.9 parts, while the cinchonidine only averaged 26.7 parts. The results obtained in analyses of twenty-five hybrid barks showed more total alkaloid with proportions somewhat different from the theoretical quantities calculated for a typical hybrid on the assumption that it would partake equally of the character of the two parents. The quinine ranged from 30.8 to 55.3 per cent of the total alkaloid, the figures for cinchonidine increasing more or less with the decrease of the quinine, and the two together constituting four-fifths of the whole alkaloid. The highest amount of quinine in the succirubra barks was only equal to the lowest in the hybrid barks, whilst that of the highest of the hybrids merged into the lowest of the official barks.—After *Pharm. Journ.*

### Preparation of Pure Hydrogen.

ACCORDING to Schwarz, a very profitable method of preparing pure hydrogen gas consists in mixing together 20 parts of zinc-dust and 22.8 parts of calcium hydrate, obtained by slaking caustic lime with a sufficient quantity of water, then sifting and drying at 100° C. On gently heating the mixture, hydrogen gas is given off in copious quantities and very regularly. 20 Gm. of zinc and 22.8 parts of calcium hydrate yield 5,200 C.c. of pure hydrogen at 0° C. and 760 mm., corresponding to 0.466 Gm. of water. The mixture cannot be kept ready-mixed, as it will gradually react even in the cold.—*Dingl. Polyt. Journ.*

### The Adulteration of Sherry.

IN the last issue of the United States Consular Reports, the Consuls at Cadiz and Jerez de la Frontera return to the subject of the adulteration of sherry, on which they reported most unfavorably. Mr. Ingraham, of Cadiz, sends a translation of a circular from the Spanish Minister of the Interior to the civil governors of the provinces, directing prosecutions against the makers and vendors of adulterated wines, in accordance with a royal decree against adulteration. Adulterated wines are thus defined in the decree: Natural wines which contain: (1.) Impure industrial alcohol and alcohol from husks (cascara), if they are not rectified and purified. (2.) Salicylic acid and other antiseptic substances. (3.) Foreign coloring substances, those derived from the products of pit coal (sic), as well as of vegetable or other origin. (4.) Artificial glucose, sugar from flour, or new wine. (5.) Glycerin. In a report on the trade in sherry for last year, Mr. Ingraham says: "Old houses admit that the demand for low-priced wines compels them to yield reluctantly and compete for the market by using Berlin spirits for rectification at one-half the cost of Spanish grape alcohol, which is sold at 25l. to 30l. a butt, according to vintage, while German alcohol is selling at 13l. a butt under sharp competition and on long credit." Eleven thousand butts of this spirit were imported into Cadiz in 1886, and consumed in the province, the total average vintage of which was 75,000 butts. The Mayor of Jerez declares that all the misfortunes of the wine-growers arise from the use of the industrial spirits; that the cellars are "mysterious laboratories, whose secrets no one is allowed to penetrate," and that the spurious usurps the genuine wines. It is said that only four gallons of spirit are used in a butt of wine, but the proportion of import to the vintage is as 11 to 75, and Cadiz only imports about one-twentieth of that annually imported into Spain.—After *J. S. Chem. Ind.*

[ORIGINAL COMMUNICATION.]

## HISTORICAL NOTES ON ANTIMONY AND ITS PRINCIPAL COMBINATIONS.

BY PROF. JAMES F. BABCOCK, BOSTON.

THE native trisulphide of antimony (stibnite) was known to Eastern nations from the very earliest times under the name of *kohl* or *kohol*—a word which has passed into alcohol—the modern name of spirit of wine, but which was first applied to this mineral, and afterwards to any fine powder. POPPIUS, in his *Basilica antimonii*, writes as follows: "The use of this by the Spanish women for improving the beauty of their eyelashes was very common; the powder was called alcohol (which term even to the present day is employed in chemical laboratories), whence crude and unbroken antimony is called antimony." LEMERY says: "To alcoholize or reduce into alcohol signifies to subtilize, as when a mixture is beaten into an impalpable powder" (Lemery, "Course of Chemistry," translated by W. Harris, London, 1686, page 40. See also note to "Alcohol," in NEW REMEDIES, December, 1880, p. 359).

The use of the sulphide of antimony as a cosmetic was common among the Syrians, Babylonians, Arabs, Hebrews, and other Oriental nations, a custom which is several times referred to in the Old Testament. "Jezebel heard of it, and she painted her face and tied her head, and looked out at a window," 2 Kings ix. 30. St. Jerome's translation of this passage reads, "*depixit oculos suos stibio.*" "For whom thou didst wash thyself, paintedst thy eyes, and deckedst thyself with ornaments," Ezekiel xxiii. 40. In the Spanish translation, this passage is rendered "*alcoholaste tus ojos.*" St. Jerome's translation reads: *circumlinisti stibio oculos tuos.*"

DIOSCORIDES (1st century) writes of the crude mineral under the names of στίμμι and στίβι. He describes it as crystalline and friable. In preparing it as a paint, he directs that it should be inclosed in a lump of dough, and buried in coals until reduced to a cinder; extinguished with milk and wine, it is again to be placed upon coals, and blown till ignition, but he cautions that if burned too long, it becomes lead [see below; also foot-note] (Dioscorides, v., 99). The description given by PLINY (1st century) does not correspond in all respects to the ordinary sulphide of antimony. He says: "It is white and shining without being transparent, and has the several names of *stimmi*, *stibi*, *alabastrum*, and *larbasis*. There are two kinds of it, the male and the female. The latter kind is the more approved of, the male stimmi being more uneven, rougher to the touch, less ponderous, not so radiant, and more gritty. The female kind, on the other hand, is bright and friable, and separates in laminæ, and not in globules. Stimmi is possessed of certain refrigerative and astringent properties, its principal use in medicine being for the eyes. Hence it is that most persons call it *platyophthalmon* (meaning eye-dilating), it being extensively employed in the callilepharic (meaning beautifying the eyebrows) preparations of females. . . . The method of preparing it is to burn it inclosed in a coat of cow dung in a furnace, which done, it is quenched with woman's milk, and pounded with rain water in a mortar." PLINY then directs the powder to be washed, and the fine portion poured off and allowed to settle. He adds: "The main thing of all is to observe such a degree of nicety in the heating it as not to let it become lead." Some writers infer from this passage and a similar one in Dioscorides that the ancients occasionally obtained antimony in a metallic state, but, as in the case of zinc, confounded it with lead, which was better known to them (Pliny, "Natural History," xxxiii., 33, 34.

The origin of the name antimony is uncertain. In the Latin translation of GEBER (8th century), the crude sulphide is called *antimonium*. Geber writes: "Antimony is calcined, dissolved, clarified, congealed, and ground to powder; so it is prepared ("Sum of Perfection," Book I., Part III., ch. 8.).*

BASIL VALENTINE (15th century) says: "The Arabians, to whom in times past this mineral was known, did in their language call it *asinat;* but the Chaldeans called it *stibium:* among the Latins at this day the name *antimony* is used,† by which name they first of all signified it.

* The first Latin translator of Arabic works in the Middle Age was Constantinus Africanus, of Salerno (about 1020 to 1085 A.D.). It is in his translation of a work of Ishâk ben Suleimân (died 932 A.D.), entitled "Liber de gradibus," that the term *antimonium* first occurs. At least, this passage, as occurring in a translation which is supposed to have been made previous to that of any of Geber's works, may be placed first.—ED. AM. DRUGG.

† The Arabic name of antimony is *ithmid* or *ithmad* (or *uthmud*, as some authorities give). In Bazil Valentine's work, the term *asinat* is probably only a misprint for *asmat*. The "New English Dictionary" (Murray) says: "Like many other alchemistic terms, *antimony* is a corruption of some Arabic word, refashioned to wear a Greek or Latin aspect—perhaps, as has been suggested, of the Arabic name *uthmud*, *othmod* itself, latinized *athimodium*, *atimodium*, *atimonium*, *antimonium*. The earlier form of the Arabic is *ithmid*, in which Littré suggests an adaptation (quasi *ithimmid*) of Greek στίμμι-δ-α, variant of στίμμι, whence also Latin *stibium*. If this conjecture is substantiated, antimonium and stibium will be transformations of one and the same word."

The word stimmi had long been suspected to be of Egyptian origin, as it is evidently formed after the pattern of other words known to be of this origin, such as *kommi*, *kiki*, *ammi* (to which may probably be added *cappari*, *cinnabari*, *sinapi*, *thlaspi*, etc., etc.). And it has indeed been found upon inscriptions dating from the 17th century before Christ (from the temple of Denderah), in which an Egyptian fleet is reported to have brought from the extreme northeast of Africa, among other commodities, also *setem* or *stimmi*, which is sulphide of antimony. The substance itself was found in mortars discovered in the laboratories of old Egyptian temples.—ED. AM. DRUGG.

We Germans in our language have given it a name which seems to express a certain property of its nature; for since it is seen to consist of a certain streaked matter, and of it may easily be made glass, endued with various colors, which proceed therefrom, we have called it *spiesglass*, as if we should say streaked glass" ("Chariot of Antimony," London, 1678, p. 35). The French story that the name, which in that language is *antimoine*, originated from the accidental poisoning of monks, to whom Valentine had administered it, supposing it would have the same fattening effect upon them that it had upon swine, has no foundation. Valentine, indeed, mentions the fattening of swine by the use of the crude sulphide, but he says nothing of its administration to monks. He writes: "Therefore let men know that antimony not only purgeth gold, cleanseth, and frees it from every peregrine matter, and from all other metals, but also, by a power innate in itself, effects the same in men and beasts. If a farmer purpose in himself to keep up and fatten any of his cattle, as, for example, an hog, two or three days before let him give to the swine a convenient dose of crude antimony—about half a drachm mixed with his food—that by it he may be purged, through which purgation he will not only acquire an appetite to his meat, but the sooner increase and be fattened" (Bazil Valentine, "Chariot of Antimony with Annotations by Theodore Kirkringius, M.D.," London, 1678, p. 86). BERGMANN remarks: "As to what is said by some, that it derives its name of antimony from its bad effects on the monks of his society, as if *antimonachal*, is entirely without foundation, as Basilius himself makes use of that appellation, which otherwise he certainly would not have done" (Bergmann's "Chemical Essays," III., 110).

VALENTINE (15th century) also gave the first detailed account of antimony and many of its preparations and combinations in his "Triumph-Wagen Antimonii," first published in Leipzig in 1604. "In this work," says Roscoe, "the characteristic properties of the antimony compounds are so completely given that up to the beginning of this century hardly any further knowledge of this subject had been gained." VALENTINE was the first to give a clear description of the method of preparing the regulus or metal, which he calls *speisglas-rex*.* He does not, however, claim this as a new discovery, for he expressly states that the stellate crystalline surface shown by the metal had been observed before his time. He gives the following process: "Take of the best Hungarian speis-glas and crude tartar equal parts, and of sal-nitre half a part; grind them well together, and afterwards flux them in a wind-furnace; pour out the flowing matter into a cone, and there let it cool; then you will find the regulus, which thrice or oftener purge with tartar and nitre, and it will be bright and white, shining like cupellate silver, which hath fulminated and overcome all its lead" ("Chariot of Antimony," London, 1678, p. 107). VALENTINE mentions the use of the metal for casting printer's types, and says: "Antimony is useful for many purposes, and, among others, for making the letters employed by printers." Valentine regarded antimony as an imperfect lead. He says: "Between antimony and common lead there is a certain near affinity, and they hold a strict friendship each with the other. As a tree casts out of its side its superfluous rosin, which is the sulphur of that tree, as the cherry tree and other trees which give forth such gums, . . . so the earth likewise hath abortive fruits, which in separation from the pure metals are severed and cast out." In his work entitled "Offenbarung der verborgenen Handgriffe," Erfurth, 1624, he says: "Antimony is the bastard of lead, as wismuth or marcasite is the bastard of tin." In a French manuscript, "Macrocosme ou Traité des Minéraux," quoted by Hoefer, VALENTINE gives the following method of preparing the regulus: "By the addition of tartar and salt, there may be made from antimony a regulus, which, being melted, if there be added steel-iron by a secret preparation, it will show a star, which before my time was called the philosophical star" (Hoefer, "Histoire de la Chimie," Paris, 1866, Vol. I., 483). Valentine and some of his contemporaries believed that the crystalline surface was only produced when iron was used in its preparation, but BOYLE discredited this explanation, and claimed that iron for this purpose was unnecessary. He says: "Upon this subject I must not omit to tell you that awhile since an industrious acquaintance of ours was working on an antimony, which, unawares to him, was, as we then supposed, of so peculiar a nature, that making a regulus of it alone without iron, the common way (for his manner of operation I inquired of him), he found, to his wonder, and showed me his regulus adorned with a more conspicuous star than I have seen in several stellate reguluses of both antimony and Mars" (Boyle, "On the Unsuccessfulness of Experiments"). It was claimed by some chemists that the crystalline surface shown by the pure metal was connected with a favorable conjunction of the stars. Of this, LEMERY says: "The star which appears upon the martial regulus of antimony when it is well purified, has given occasion to the chemists who reason upon the matter; and the greatest part of these men being strongly persuaded of the planetary influences and a supposed correspondence between each of the planets, and the metal that bears its name, they have not wanted to assert that this same star proceeded from the impression which certain little bodies flowing from the planet Mars do bestow upon antimony for sake of the remaining iron that was mixed with it, and for this reason they wonderfully recommend the making of this preparation on Tuesday rather than another day, between 7 and 8 o'clock in the morning, or else between 2 and 3 in the afternoon, provided the weather be clear and fair, thinking that that day which is denominated from Mars to be the time that it lets fall its influences most plentiful of any. . . . But all opinions] of this kind have no manner of probability, for nobodies experience did ever evince that the metals have any such correspondence with the planets, as I have maintained otherwhere; much less can they prove that the influences of the planets do imprint such and such figures to metals, as these men do determine" (Lemery, "A Course of Chemistry," translated by Walter Harris, M.D., London, 1686, 212).

Notwithstanding the exact descriptions of antimony by VALENTINE, this metal was confounded with bismuth by LIBAVIUS and some other chemists of the sixteenth century. ETTMULLER described the regulus as "the most noble and most metallic part of antimony (*i. e.*, the sulphide) or rather the concentrated mercury of antimony; this regulus is of the nature of lead or an imperfect metal" ("Chymia rationalis," Leyden, 1884). LEMERY in a work published in 1707, "Traité de l'antimoine," Paris, gave a complete description of antimony and a large number of antimonial preparations. NEUMANN in his "Chymia medica," 1756, writes as follows: "Lemery in his treatise on antimony describes no less than two hundred preparations of antimony; among which there are many good and many useless ones. That gentleman was an excellent workman, but an unhappy philosopher; we may depend on his operations, but we are not to trust his theory" (Neumann, "Chemical Works," translated by William Lewis, London, 1773, Vol. I., 200).

Native antimony was discovered by SWAB at Sahlberg near Sahl, Sweden, in 1748. (Act. Acad. reg. scient., Stockholm, 1748.)

Antimony and its combinations were especially studied by BERGMANN (1773–1782); by BERZELIUS (1812–1821); by ROSE (1825); by PHILLIPS (1830); and by FREMY (1844).

The first determination of the atomic weight of antimony was by BERZELIUS in 1818. He gave the weight as 129 (*Schw. Jour.*, xxii., 69); SCHNEIDER in 1856 claimed that 120 was more exact (*Pogg. Ann.*, xcviii., 243); DEXTER found it to be 122 (*Pogg. Ann.*, c., 563); this result was confirmed by DUMAS in 1859, and by KESSLER in 1861 (*Ann. Chim. et Phys.*, 3, lv., 129; *Pogg. Ann.*, cxii., 145). COOKE in 1878 after a very thorough examination decided in favor of 120 as the correct figure (*Amer. Jour. Science*, 3, xv., 41 and 107).

Explosive or electrolytic antimony was discovered by GORE in 1858 (*Phil. Trans.*, 1858, 185; 1859, 797; 1862, 323).

ANTIMONY CHLORIDES.—The preparation of antimony trichloride is given by VALENTINE in his "Triumphwagen Antimonii," 1604. His method consisted in the distillation of equal parts of the native sulphide with corrosive sublimate. He called the product *speisglas-öl* and says of it: "The oil which comes over is at first white, and congeals like ice or clots of butter."

An oxychloride of antimony precipitated when a concentration solution of the chloride is added to water was known to VALENTINE. PARACELSUS (1493–1541) describes this preparation under the name of *mercurius vitæ* ("Archidoxorum," lib. 5, 20). This preparation was for a long time believed to contain mercury, but GLAUBER showed this to be an error. He writes: "Take this white powder called mercury of life and heat it in a crucible; you will find that it is transformed into a glass of antimony, but you will not obtain a trace of mercury." GLAUBER prepared the chloride of antimony by treating its oxide with spirit of salt (hydrochloric acid) and he states that similar products may be obtained by treating arsenic, tin, and zinc in the same manner.

Towards the end of the 16th century the precipitated oxychloride of antimony was much employed by a Veronese physician, ALGAROTUS, under the name of *pulvis*

* From several passages occurring in old classical and Oriental works, it has been surmised that *metallic antimony* was known at the time when the respective works were written. Thus, Pliny, in his "Natural History," 33, 34, says of sulphide of antimony: "Ante omnia autem urendi modus necessarius est ne plumbum fiat." "But, before all, moderation must be used in roasting, lest it become lead." A similar remark is made by Dioscorides. The meaning is simply "lest it melt like lead." Wittstein and others have misunderstood the passage.

In a Sanskrit glossary of synonyms of substances used in Hindu medicine, composed by a Cashmeer physician, Narahari, between the years 1235 and 1250, there occur, in the section on minerals (xiii., 87–89; 98–100; edition of Garbe) two chapters, the first of which is rightly interpreted by Garbe as referring to the native black sulphide of antimony, as every attributive there mentioned ("black, dark-colored, eye-stimulating, collyrium," etc.) exactly agrees with the crude substance. A subsequent chapter, however, speaks of another form of antimony, which Garbe refers to the pure metal, basing his opinion on a few descriptive adjectives (*sauvira-sâra*, "the essence of sauvira" that is, of sulphide of antimony); *kapota-sâra*, same meaning), used in the text. But in the absence of any other confirmatory proof that antimony as a metal was known to the Hindus in those days, the description alluded to is most probably to be referred to a *purified* sulphide. Indeed, one of the adjectives used by Narahari ("valmikagirsha," "having the form of an ant-hill,") and which Garbe tried, unsuccessfully, to find an explanation for, refers undoubtedly to the shape the mass acquires from the vessel in which it is fused. It is even at this day sold in roundish masses of the form of the vessel in which it is melted. While in the instances quoted a knowledge of antimony as metal is not to be assumed, it is quite probable that metallic antimony was known in Europe even before Basil Valentine, though he is the first one to mention it.—ED. AM. DRUGG.

*angelicus*. It was afterwards known as the powder of Algaroth. CROLLIUS in "Basilica chymica," Francof., 1609, described it under the mass of *antimonium diaphoreticum*, and BEGUINIUS in his "Tyrocinium chymicum," Paris, 1608, called it *bezoardicum minerale*. The determination of the exact nature and composition of this precipitate is due to PHILLIPS (1830), and MALAGUTI (1835) (*Phil. Mag.*, VIII., 406; *Ann. Chim. Phys.* (2), LIX., 220).

ANTIMONY HYDRIDE.—This gas was discovered in 1837 by L. THOMPSON (*Lon. and Ed. Phil. Mag.* (3), X., 353); and about the same time independently by PFAFF (*Pogg. Ann.*, XLI., 339). It was specially studied by JONES in 1876 (*Chem. Soc. Jour.*, 1876, 641).

ANTIMONY OXIDES.—The trioxide of antimony was described by DIOSCORIDES and PLINY [1st cent.], and was obtained by roasting the native sulphide.

BASIL VALENTINE prepared a crude antimoniate of potassium by the fusion of antimony with nitre; he gave to the product the name *pulvis albus antimonii*. LIBAVIUS (1560–1616) treated the residue obtained in this way with acids, and thereby produced an impure antimonic acid.

A celebrated nostrum consisting of oxide of antimony and phosphate of calcium, produced by heating the sulphide with horn shavings, and called *pulvis febrifugus Jacobi* or James's powder, was introduced by DR. JAMES, an English physician, about 1750. In the London Pharmacopœia of 1788 it is called *pulvis antimonalis*.

PEARSON made an examination and analysis of this nostrum in 1791 and disclosed its composition and mode of preparation (*Phil. Trans.*, LXXXI., 317).

The earliest mention of the native oxide (valentinite) was by MONGEZ in 1783 (*Jour. de Phys.*, XXII., 66). ROSSLER, examining a variety of this mineral from Bohemia in 1784, confirmed the composition determined by Mongez (*Crell's Ann.*, I., 334).

The number of the oxides of antimony was for some time in dispute. THENARD in 1799 mentioned six (*Ann. Chim.*, XXXII., 259). PROUST in 1804 admitted only two (*Jour. de Phys.*, LV., 328). BERZELIUS (1812–1821) determined that there were three (*Ann. Chim.*, LXXX.; *Ann. Ch. Phys.*, XVII.).

The salts of antimonic acid were studied by BERZELIUS in 1818 (*Schweig. Jour.*, XXII., 69). These salts were thoroughly investigated by FREMY in 1843. This chemist suggested the antimoniate of potassium as a reagent for the detection of sodium salts (*Comptes Rendus*, XVI., 187; *Ann. Chim. Phys.* [3], XII., 499). HEFFTNER studied the same subject in 1852 (*Pogg. Ann.*, LXXXVI., 418). SCHLIPPE in 1821 described the sulphantimoniate of sodium, known as Schlippe's salt (*Schweigg. Jour.*, XXXIII., 320).

ANTIMONY AND POTASSIUM TARTRATE.—BASIL VALENTINE (15th cent.) was the first to mention the medicinal virtues of antimonial preparations ("Triumphwagen Antimonii," Leips., 1604). PARACELSUS (1493–1541) contributed much towards the extension of the medical use of antimony, but he divided the medical profession into two hostile camps, which for a long time carried on a bitter contest in regard to the merits of these preparations. SEVERIN, a most ardent disciple of PARCELSUS, still further popularized the use of these medicines. In 1571 he wrote: "Just as antimony purifies gold and separates impurities from mineral substances, so it removes from the body of the sick man all impediments to the play of the natural functions of his organization ("Idea medicinæ philosophicæ," etc., Basle, 1571).

In 1556 the opponents of the medicine obtained an act of the Paris parliament forbidding the use of antimony and its compounds, and in 1603 the medical faculty of Paris took a similar step, and issued a decree which declared antimony to be a poison, and condemned its use (Sprengel, "Hist. de la Med.," III., 121). In the same year, a celebrated physician, TURQUET DE MAYERNE, was prosecuted under this decree because he had, in spite of the decree, sold antimonial preparations, and BESNIER in 1609 was expelled from the medical faculty for having prescribed them.

The decree of the faculty against Turquet, dated at Paris, December 5th, 1603, is as follows: "The College of Physicians in the Academy of Paris, legally assembled, having heard the report of the faculty to whom was entrusted the duty of examining the tract published under the name of Turquet of Mayerne, condemn it unanimously as an infamous libel, full of proved falsehoods and impudent calumnies, which could only be made by an ignorant and impudent man furious from drink. Turquet himself is judged to be unfit to practice medicine, on account of rashness, impudence, and ignorance of true medicine. All true physicians who practise among any people or in any place, are exhorted to exclude Turquet and similar monstrosities of men and opinions from themselves and their boundaries, and to remain faithful to the teachings of Hippocrates and Galen; and any one of the order of physicians of Paris is prohibited from entering into medical consultation with Turquet and those like him. Whoever does otherwise, shall be deprived of the privileges of the academy, and expelled from the number of the regents" (Hoefer, "Hist. de la Chimie," II., 239).

SYLVIUS (1614–1672) was a zealous partisan in favor of antimonial preparations as remedial agents and among others he advocated the use of regulus of antimony cast into pills like shot, which when once used were washed and kept for future employment for the same purpose—hence their name *pilulæ perpetuæ* (Sylvius, "Opera medica," Amsterdam, 1679). Goblets in which wine had been allowed to stand for some time, were also employed and it was believed that both the pills and the goblets acted only by contact and did not lose weight. VIGANI (1683) was one of the first to combat this idea. He affirms, as the result of his own experience, that the antimony gradually lost weight, and that wine was rendered emetic by the combination of the tartar contained in the wine with the particles of the metal (Vigani, "Medulla chemiæ," London, 1683). LEMERY expresses a similar opinion. He says: "When a man swallows the perpetual pill, it passes by its own weight and purges downwards; it is washed and given as before, and so on perpetually. . . . Almost all chemists have written that this pill loses nothing at all of its weight, though taken several times. It is true, indeed, the diminution is but very small, yet, nevertheless, it would not be hard to remark it in some measure. . . . When this pill had been taken and voided twenty or thirty times, it purges not so much as it did at first, as well because the more soluble parts of the sulphur are gone, as that which remains doth pass without any great effect" ("A Course of Chymistry, by Nicholas Lemery," translated by Walter Harris, M.D., London, 1686). During the period of the medical controversy on antimony (1620) CORNACCHINI, professor in the university at Pisa, published a work entitled "Methodus in pulverem," in which he gave an account of a powder, invented by the Earl of Warwick, which had acquired great celebrity in Italy. This powder was composed of scammony, crude antimony, and cream of tartar triturated together. The wonderful cures attributed to its use attracted the attention of a physician of Mecklenburg, named MYNSICHT, who in 1631 described a preparation made by boiling a solution of tartar with *crocus metallorum* (Mynsicht, "Thesaurus medico-chymicus," 1631). To this preparation he gave the name of tartar emetic. MYNSICHT was the first to clearly describe the preparation of this salt, but there are indications that it was known to some of the earlier chemists—as VALENTINE and LIBAVIUS (Hoefer, "Hist. de la Chimie," Vol. I., 480). Glass of antimony was afterwards substituted for the crocus. LEMERY writes: "This preparation is a soluble tartar, impregnated with some portion of glass of antimony which renders it emetic." SALA, whose works were published in 1647, wrote a treatise on the medical uses of antimony ("Anatomia antimonii"), in which he insisted on extreme care in the use of antimonial preparations. He says: "Whoever values his health should be on his guard against these medicines. Independently of the arsenic which is found naturally in antimony, this substance may by combination with other bodies acquire poisonous properties, just as mercury, which in itself is not a poison, may become so in the state of corrosive sublimate" (Sala, "Opera medico-chymica," Francf., 1647). In 1637 antimony wine was allowed a place in the officinal French pharmacopœia, and in 1666, upon the petition of the medical faculty, the original decree of the parliament against it was rescinded. In an essay on "Antimoniated Tartar," in 1773, BERGMANN gave a full account of its preparation and properties (Bergmann, "Opuscula," I., 10). This salt was especially studied by THENARD, 1801 (*Ann. Chim.*, XXXVIII., 39); and by PHILLIPS, in 1825 (*Ann. Philos.*, (2) IX., 372).

ANTIMONY SULPHIDES.—The early use of this mineral as a cosmetic and the references to it by DIOSCORIDES and PLINY have been already given. Among the alchemists and the early metallurgists crude sulphide of antimony was employed to separate the baser metals from gold. It was called by a variety of names, as *lupus metallorum, proteus aries, othia, saturnus philosophorum, magnesia saturni, judex ultimus*, etc. VALENTINE and GLAUBER knew that the mineral contained sulphur, but its exact composition was first definitely stated by BERGMANN in 1782 (Bergmann, "Opuscula phys. et chem.," III., 164). VALENTINE (15th Cent.) describes the preparation of the red or precipitated sulphide as follows: "Antimony (sulphide) is pulverized and boiled for two hours in a concentrated lye prepared from the ashes of the oak; strong vinegar is then added, and the liquid filtered. The antimony will thus become a beautiful red" ("Triumphwagen Antimonii," Leipzig, 1604, p. 168). GLAUBER, in 1654, describes a preparation, which he calls *panacea antimonialis or sulphur purgans universale*, made by precipitation of a solution of the slag produced during the preparation of regulus by means of vinegar ("Pharmacopœa spagyrica"). ETTMULLER, in 1684, describes a similar preparation. He states that when crude antimony is fused with alkalies, in order to extract the regulus, the sulphur is absorbed by the flux, and that to extract it, the slag should be dissolved in water and acid added, when "there is produced a horrible stench and a diaphoretic sulphur, called golden sulphur of antimony, is precipitated" (Ettmuller, "Chymia rationalis," 1684). This preparation consisted only of sulphur, such as would be produced by adding an acid to a solution of alkaline polysulphide, but afterwards a preparation containing antimony was, by later writers, directed to be made by adding acid to a more or less oxidized solution of sulphide of antimony containing sulphantimonate of the alkali. Precipitated sulphide of antimony was extensively

used as a medicine about [the beginning of the 18th century under the name of kermes mineral. A Parisian apothecary, named DE LA LIGERIE, had bought the secret from a German apothecary, a disciple of Glauber. The administration of this preparation by a monk named Simon to a Carthusian monk, whose life had been despaired of by the Paris faculty, is said to have restored him to health. The preparation thus acquired a great reputation. Simon called this powder alkermes mineral, and it was afterwards called poudre des chartreux, being sold by the Carthusian friars in Paris at a considerable price (Lemery, "Sur une preparation appellée communement Poudre des Chartreux ou Kermes mineral," *Mem. de l'Acad.*, Paris, 1720). Such was the celebrity for remarkable cures which this medicine acquired that the French Government purchased the secret of its preparation of De la Ligerie in 1720.

The composition of this sulphide was the subject of much controversy. It was studied by GEOFFROY in 1735 (*Mem. de l'Acad.*, Paris, 1735). ROSE in 1825 showed that kermes was amorphous sulphide of antimony (*Pogg. Ann.*, III., 441).

*Hepar antimonii*, or liver of antimony of the earlier chemists, was a mixture of the trioxide and the trisulphide prepared by deflagrating equal parts of crude antimony and nitre. This liver-colored mass, pulverized, and edulcorated with water, was known as *crocus metallorum* (Newman's "Chemistry," London, 1773, Vol. I., 208; Lemery's "Chemistry," London, 1686, 217).

## BURETTE FOR TITRATING HOT LIQUIDS.

DR. L. L. DE KONINCK, of Liege, describes the burette here figure din the *Zeitschr. f. angew. Chemie* (1888, 187).

In certain cases, it is necessary to heat the liquids which are to be assayed or titrated, as, for instance, when carbonates are being decomposed by standard acid, or when sugar is to be determined by Fehling's solution. When a liquid is heated while situated under a burette, or when a hot liquid is placed directly under it, the burette soon becomes coated with condensed moisture, and the contents expand through the heat ascending from the liquid. The arrangement proposed by the author does away with these drawbacks. The burette is firmly clamped to a support and a special delivery tube, bent twice, as shown in the cut, and drawn out at the point, is attached to it by means of a piece of rubber tubing. [This delivery tube is best arranged, so that it may be easily turned aside and back again, so as not to have it over the heated liquid longer than is at all necessary.]

### Rendering Blue Prints Brown.

IN the *Moniteur de la Photographie*, M. Gauthier-Villars gives the following formula for the conversion of the blue color of cyanotypes into brown:

I. *Solution for the Preparation of the Paper.*

| | |
|---|---|
| Potassium ferritartrate | 15 Gm. |
| Potassium ferridcyanide | 12 " |
| Distilled Water | 250 C.c. |

II. *Solution for Bleaching the Prints.*

| | |
|---|---|
| Ammonia (22°) | 100 C.c. |
| Distilled Water | 900 " |

III. *Solution for Coloring Brown.*

| | |
|---|---|
| Tannin | 10 Gm. |
| Distilled Water | 500 C.c. |

The blue prints are first well washed and then dipped into solution No. II. until the image is completely bleached. It is then washed again and immersed in the tannin-bath solution III., where it is left until it has assumed the desired tone, which may not be until after twelve hours. If at the end of this time the desired depth shall not yet be attained, a few drops of ammonia should be added. Finally, the print is washed with plain water. To blacken blue prints, Mr. Roy's method is recommended, bleaching yellow in a solution of 4 Gm. caustic soda to 100 C.c. water, then blackening in a solution of 4 Gm. of tannin to 100 C.c. water.

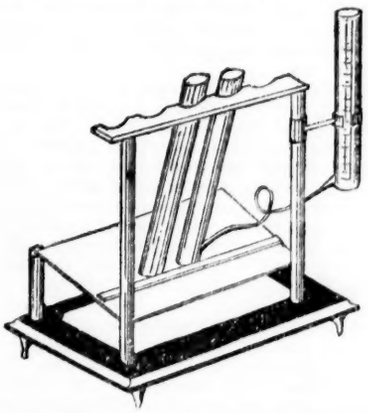
*Note.*—A detailed description of the process of making blue prints will be found on p. 117 of our volume for 1887.

## AN APPARATUS FOR COMPARISON OF COLOR TINTS.

IN certain operations, it is necessary to compare tints of color produced by known quantities of one reagent upon unknown quantities of a given liquid, for the purpose of estimating the quantity of certain constituents. One of the most familiar examples is the assay of ammonia by means of Nessler's reagent. The execution of these assays is usually performed by gradually adding small measured quantities of the reagent (of known strength) to a measured quantity of a liquid containing a known amount of ammonia, until the tint has been rendered equal to that existing in a sample of the liquid under examination, likewise treated with a known quantity of the reagent.

Mr. A. W. Stokes has devised an apparatus by means of which this assay is considerably simplified, the depth of color being equalized by adjusting the column of liquid. We quote, as follows, from *The Analyst* (June, 1888):

"Whenever it is necessary to compare a number of depths of tint with one another, it is very inconvenient to have to make up a large series of standard tints. The apparatus obviates this necessity. By reference to the annexed diagram, it will be seen to consist of a base-board on which lies a sheet of white opal glass. Placed obliquely, a little way above this, is a sheet of colorless glass on which rest the Nessler tubes containing the solutions whose tints are to be compared. The mouth ends of these tubes recline towards the observer, in grooves hollowed in a horizontal bar. This bar is supported by two pillars, on one of which slides a ring clasping a calibrated glass tube; this tube has a side tubulure at the base, and is thus, by means of a short india-rubber tube, connected with a



similar, but uncalibrated tube resting on the glass plate. A known quantity of the standard color, being placed in that tube carried by the ring, and diluted up to the top mark with water, if this tube be raised in its sliding collar, its standard solution will flow into the tube resting on the glass plate. The movable tube is so calibrated as to show how much liquid is present in the tube connected with it. Hence, if a Nessler tube containing liquid of an unknown depth of tint be placed beside the tube resting on the glass plate, and the tube in the sliding ring be raised or lowered till the tints agree in the two tubes that rest on the glass plate, a simple inspection of the level of the liquid left in the calibrated tube will give the quantity of standard color the unknown solution is equal to. The distance apart of the grooves in the horizontal bar is the average width between the eyes, so that, as the mouths of the tubes lie inclined towards the observer, and the light is reflected up from the opal glass through the full length of the tubes, observations are easily made. As shown, the apparatus will take three tubes for comparison with the standard color, but it may readily be made to take any number. By putting a similar pair of connected tubes on the other pillar, an unknown tint might be placed between two known depths of tint. A small slip of wood is fixed along the glass plate to keep the tubes in an inclined position. By placing blackened cards in front and behind the tubes, light can be prevented from entering the tubes except from the bottom. The apparatus is simple and readily cleaned. It can be obtained from Messrs. Townson & Merser, of London."

### Diphenylmethylpyrazol.

THE aniline works of Hoechst, on the Rhine, formerly Meister, Lucius & Bruening, have secured a patent on a new antipyretic, which has a composition similar to that of antipyrin, and which is designated as *diphenylmethylpyrazol* or, shorter, *diphenylpyrazol*.

The new substance is prepared by a process very much resembling that by which antipyrin is made.

It is reported to appear in form of white needles, difficultly soluble in water, ether, or petroleum ether, but easily in alcohol or glacial acetic acid. It differs from antipyrin by possessing a pronounced basic character. With nitric acid and ferric chloride, it reacts similarly to, but much more faintly, than antipyrin.—After *Zeitsch. f. angew. Chem.*

### Notes on Commercial Drugs and Chemicals.

[From the September Report of Gehe & Co., of Dresden.]

*Acetanilide* (Antifebrin).—The consumption of this antipyretic is constantly increasing. Though some authorities declare it to be affected with some drawbacks—according to Lépine, for instance, it produces decided anemia—its cheapness is probably the principal cause of its more general use.

*Alantol Essence.*—Marpmann's Alantol Essence, prepared from elecampane, has been used with continued good success in alleviating or curing acute catarrhal affections of the air passages, due to infection.

*Boric Acid.*—The discovery of the borax deposits (boronatrocalcit) in Chili, upon the high plateaus of Copiapo and Antofagasta, has materially depressed the market of Italian boric acid in Europe.

*Bromide of Ethyl* is a favorite anæsthetic in small dental operations, where only a short anæsthesia is wanted. It is said never to cause nausea, and those under its influence recover rapidly.

*Caffeine.*—No article has suffered so much depreciation during the last twenty or thirty years as this. About 1860 it was worth about eighty-eight dollars a pound; ten years later only twenty-five dollars; last year only nine dollars, and at present it is only worth five dollars. But even now it does not appear to have reached bottom. English manufacturers have succeeded in persuading the Custom Department to permit them to use damaged tea duty free, for the purpose of extracting the caffeine. The new regulations require that the tea shall be denaturalized by means of a solution of lime impregnated with asafetida, which renders it unfit for domestic use.

*Cascara Sagrada Bark* has become so firmly established in European medical praxis that every shipment was rapidly bought up, and the supplies in Europe have lately become low.

*Cinchona Bark.*—There seems to be at last a turning point reached in the exports of Ceylon cinchona bark. During the period from October 1st, 1886, to July 12th, 1887, there were exported 11,703,924 pounds; and during the same period 1887–1888, only 9,183,039 pounds. On the other hand, Java's export is constantly increasing, and cultivated bark from Bolivia is also arriving in Europe in considerable quantities. The latter appears both in flat pieces (trunk-bark) and in quills (branch bark), and are very rich in quinine. It is, however, doubtful whether the cultivators reap any profit as yet from their enterprise.

As a supplement to the article entitled "Cinchona in Columbia," in our last number (page 195), the following statements of Gehe & Co. may find a place here. These are evidently based upon much more recent information.

The Cuprea bark of Colombia still appears on the market occasionally. Up to the year 1879, it had been entirely unknown, was afterwards shipped in immense quantities to Europe, and soon appeared to have become exhausted. It is, however, reported by reliable correspondence that a revival of the Cuprea industry is not at all improbable, provided fair prices could be realized. When the first samples of cuprea bark were sent to London, in order to ascertain whether these trees growing in dense forests, at a height of less than 4,000 feet beyond the sea level could be utilized by the quinine manufacturers, it was found that they were worth 2/3 to 3/3 per pound, while their collection for the market at home was probably only 0/2½ per pound. In consequence thereof, the cuprea forests on the banks of the Lebrija and Sogamossa, and in the side valleys, were overrun by wood-shoppers already in 1880; in a few months everything had been laid low, and some 150,000 to 180,000 bales of bark were ready for export. Finally the taxes decreed by the Colombian government, the increasing costs of transport owing to the greater distances over which the bark had to be carried, and the lowering of the prices in Europe, caused an entire cessation of the industry. Nevertheless, the cuprea bark trees are not exhausted. The remaining roots have driven forth new stems and shoots, the bark of which, luckily, was for a long time unfit for stripping. At this time, however, some eight years after the demolition of the original forests, the trees are of a size to admit peeling. It will depend upon the prices of East Indian bark whether the new Cuprea can be brought upon the market.

*Citrate of Caffeine.*—The new Hungarian Pharmacopœia recognizes as citrate of caffeine a mixture of 100 parts of caffeine and 50 of citric acid. The Brit. Ph., it will be remembered, directs it to be prepared from equal parts, by weight, of caffeine and citric acid. The ordinary commercial salt is usually made by crystallizing caffeine from a solution in citric acid, in which case only about 5 per cent of the latter remains mixed with the crystallized caffeine.

*Cornutin.*—This active principle of ergot, discovered and introduced by Prof. Kobert, is only in slight demand, which is partly due to its readiness to suffer decomposition, and partly to its high price. Some gynecologists regard it as the best agent to produce contraction of the uterus, and to stop uterine hemorrhage. It is difficultly soluble in ether, easily in alcohol, acetic ether, or chloroform. An alcoholic solution of it, however, decomposes within a few hours, when exposed to light.

*Coto Bark.*—No true Coto bark has appeared on the market for some time. What was shipped to Europe as such turned out to be Paracoto Bark.

*Creolin*, the new antiseptic, is in very active and increasing demand. It is probable that it will become an active rival of crude and crystallized carbolic acid, when the latter is to serve as a disinfectant, antiseptic, or antiparasitic.

*Gum Arabic.*—The supplies of the genuine gum from the Soudan, which had been seriously interrupted during the past five years, have now ceased entirely. Consumers are compelled to use other sorts of gum, from Arabia, India, Australia, the Senegal, and even from Brazil. Gum Ghezireh, which used to be exported from ports in the Red Sea, also becomes very scarce. But a fair substitute for Ghezireh, of a whitish color, is now being delivered at Mogadore. The principal substitute on which the market has to rely is Senegal-gum, though this is also getting scarcer.

*Hydrastine.*—The alkaloid as well as its hydrochlorate are in regular though only moderate demand. They are reported to be especially efficacious in menorrhagia in doses of 0.05–0.1 Gm. (¾ to 1½ grains).

*Kola Nuts.*—Since the shippers of this valuable drug have adopted the plan to break the nut into its component parts (3 or 4), it has been possible so to dry it that it can be transported without spoiling.

*Narceine and Meconarceine.*—In Germany, narceine is used but rarely, but in Southern Europe it is in some demand. Recently a new substance, *meconarceine*, has been introduced, which is said to contain, besides narceine, several other (so far unknown) active principles of opium, and is said to be much more soluble than pure narceine. As long as the actual composition of the former is not made known, it will have but little chance of being regularly used.

*Peroxide of Hydrogen* is now obtainable also in about double the former strength, viz., 20 per cent by volume. It is, however, impracticable to warrant the stability of this solution, as it will lose gas even at ordinary temperatures.

*Phenacetin.*—Bayer's phenacetin is constantly extending its use. In antipyretic effect it is at least equal to antipyrin and antifebrin; and as an antineuralgic it is ahead of the latter. It is not unlikely that it will be found to possess still other valuable properties.

*Powdered Glass.*—Gehe & Co. announce that they have a stock of powdered glass specially prepared from the purest white glass.

*Solanine.*—The demand for this alkaloid has lately been so great that it could not be supplied. It is used in doses of 0.05 to 0.3 Gm. (¾ to ab. 4 grains) per day internally, or 0.01 to 0.05 Gm. (⅛ to ¾ grain) 2 to 4 times daily, hypodermically, in ischias, tic douloureux, and other nervous diseases as an analgesic and anæsthetic.

*Sozo-iodol.*—This substitute for iodoform, which is, chemically speaking, di-iodo-paraphenol-sulphonic acid, has recently been offered in form of a salt, combined with sodium, potassium, mercury, and zinc. It is said to equal iodoform as an antiseptic, and in some cases even to surpass it.

*Succinic Acid and Amber.*—A prominent firm engaged in the amber industry has offered a prize for the discovery of new channels in which succinic acid and oil of amber could be technically utilized.

*Sulphonal.*—This new hypnotic, chemically "di-ethyl-sulphone-dimethyl-methane," has been in considerably increased demand. But until its price becomes very materially reduced, there is no probability that it will displace the commonly used hypnotics.

*Tincture of Strophantus* has greatly fallen off in use. According to Prof. Eichler, digitalis is preferable to it, as it acts more rapidly.

### Tasteless Liquid Extract of Cascara Sagrada.

MR. R. WRIGHT read a paper on the above subject, at the late meeting of the Brit. Pharm. Conference, from which we give the following, after *Chem. and Drugg.:*

Mr. Wright adopted the plan proposed by F. Grazer, of using magnesia to combine with the resins, the bitter principle being left behind, and recommends the following process (in which we have substituted U. S. weights and measures):

| | |
|---|---|
| Cascara Bark, in No. 40 powder | 16 ℥ |
| Calcined Magnesia | 2 ℥ |
| Distilled Water | 28 fl. ℥ |
| Diluted Alcohol | q. s. |

Mix the powders in a large mortar, and make a paste with the water. Allow to stand for twelve hours, and dry over a water-bath. Reduce the dry mass to powder, moisten it with 18 fl. ℥ of Diluted Alcohol, and pack tightly in a series of six percolating tubes. Percolate with Diluted Alcohol, the percolate from No. 1 tube being used as a menstruum for No. 2, and so on until the last of the series is reached. Diluted Alcohol is added to No. 1 tube as required, and the first 14 fl. ℥ which pass through the last tube are reserved. Percolation is then continued until the powders are exhausted. From these percolates the alcohol is recovered by distillation, and the residue evaporated on a water-bath to the consistence of a syrup. This is

added to the reserved portion, and the volume made up to 16 fl. ℥ with Diluted Alcohol.

*Note.*—The original formula everywhere directs proof spirit (Brit. Ph.) in place of diluted alcohol. But the latter being so near in strength to the former and better known here, will no doubt answer the same purpose.

### Two New Antiseptics.

METHYLENEDOL CARBONIC Acid and Methylenedol-acetic Acid are the names of two new antiseptics. A paper has been read concerning them by Professor Penzoldt, from which it appears that the first occurs as white acicular needles, nearly insoluble in cold water, though the sodium salt is more readily taken up by that menstruum. It was found to be very efficacious in the treatment of wounds, both fresh and ulcerated. Even forty-five grains given internally were not observed to exercise any poisonous effect, or to produce any unpleasant symptoms. As the preparation of the carbonic acid compound is very difficult and expensive, the methylenedol-acetic acid has been made, and while much more cheaply prepared, it is equal to the first-named in the treatment of wounds. Further trials are to be made in order to determine if these compounds are preferable in antiseptic surgery to iodoform.—*Chem. and Drugg.*

### Preparation of pure Hydrogen Peroxide from the Commercial Product.

COMMERCIAL hydrogen peroxide often contains hydrochloric, sulphuric, phosphoric, hydrofluoric acid, alumina, lime, magnesia, potash, and soda, derived from the water used in the manufacture, while baryta and traces of iron, copper, lead, and manganese are sometimes found if it has been carelessly made.

When these last are present, the product is stable only if it be sufficiently acid, though even then it is less stable than in the absence of these impurities.

The pure substance is chiefly used as an antiseptic in the treatment of sores. The commercial liquid, of about 3 per cent strength, is purified by the addition of about ¼ per cent concentrated phosphoric acid (preferably pure) to precipitate iron, copper, lead, and manganese, and prevent the subsequent formation of their peroxides, which would otherwise take place. Saturated baryta water (hot or cold) is then added very gradually, until neutrality is reached; no excess must be used or hydrated $BaO_2$ will be precipitated, which will produce decomposition of a portion of the hydrogen peroxide.

The clear liquid is now drawn off, and is poured into an excess of cold saturated baryta water, when hydrated $BaO_2$ is thrown down, and is then washed until no metal except barium can be detected in the washings.

The $BaO_2$ is then suspended in water and added drop by drop to a solution consisting of 100 parts of distilled water to 10–12 of pure concentrated sulphuric acid until only traces of acid remain free; these are best removed by weak baryta water, for an accidental excess of $BaO_2$ will induce decomposition of some of the already formed hydrogen peroxide, while an excess of BaO will have no such effect. The barium sulphate is allowed to settle, and the clear liquid drawn off, if found free from both barium and sulphuric acid.

The resulting product is about 3 per cent strength, very stable, and of great purity.—MANN in *Chem. Zeit., J. S. Chem. Ind.*

### Impure Iodoform.

CERTAIN commercial brands of iodoform, particularly a few which are reputed to be the purest, have been found by C. Neuss, of Wiesbaden, to yield with 10 parts of ether immediately a red solution, while other brands furnished a yellow solution retaining its tint for at least 10 minutes. In all other respects, the former responded to the requirements of the Germ. Pharmacopœia. The samples which produced the red solution were also found to impart to pure gauze (free from chlorine) at once a green color, even when light was excluded. Curiously enough, this green color returned again to normal yellow when the gauze was kept in the dark for some days or weeks. Iodoform which behaves as above stated, *exercises a caustic effect upon the skin.* A person who manufactured prepared gauze with this kind of iodoform, suffered from eczema for several days. It is not impossible that the secondary effects of the drug reported by numerous observers are due to the same impurity as that which causes the above-mentioned color reactions. The quality of ether used for the first experiment has only a slight influence upon the reaction, since chemically pure ether can retard it only for 1 or 2 minutes.

The chemical nature of the secondary body which yields up its iodine so readily has not yet been made out. That the iodine must be originally in combination is shown by the fact that alcohol fails to remove it from the iodoform, while the red ethereal solution undoubtedly contains free iodine. The author is convinced that neither free iodine nor hydriodic acid are present previous to the solution in ether, also that the secondary body is more easily soluble in ether than iodoform itself.—After *Pharm. Centralh.*, No. 39.

### MEASURING FLASK WITH BURETTE.

R. SCHUETZE employs burettes bearing a globular reservoir at the top, which is connected with the burette by means of a three-way stop-cock. If the contents of the reservoir are such that only washed air may be allowed to have access to them, then the outlet of the stop-cock at *W* is connected, by means of rubber tubing, with the tube *r*, and the wash-funnel *i* is charged with a liquid suitable for keeping the contents of the reservoir free from contaminations which might be caused by air.—*Chem. Zeit.*

### A LABORATORY DRYING-OVEN.

FROM a paper by Mr. A. J. Banks, published in the *Chem. News* (Aug. 3d), we take the following:

In laboratories where steam is used for the purpose of heating drying-ovens, evaporating-pans, etc., the water produced by the condensation of the steam is a frequent and troublesome annoyance. The supply pipes very often have to be carried a considerable distance before reaching the laboratory, and are not unfrequently exposed to strong draughts of air; hence considerable condensation of the steam is brought about and, in conjunction with that produced by the expansion of the steam on entering the oven, and the larger surface there exposed, the amount of water produced is a serious obstacle to the attainment of high temperatures.

With the object of overcoming this difficulty, I have

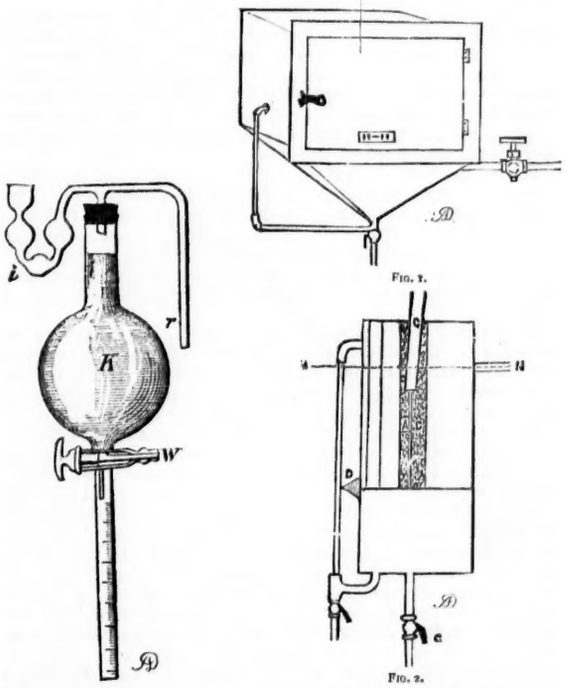


FIG. 1.



FIG. 2.

Measuring flask with burette. Laboratory drying oven.

revised a modified form of water oven, which answers admirably. Its construction will be readily understood from the accompanying drawing, which represents an ordinary drying-oven, with the bottom of the outer covering in the form of an inverted pyramid, provided with a gauge glass to indicate the height of the water, and a stop-tock or valve for running off the same. The inlet pipe is placed immediately below the inner case (see cut).

### Test for Saccharin.

SOME time ago (see this Journal, September, p. 167) Mr. David Lindo published a test for Fahlberg's saccharin, which he has since found can be modified to advantage as follows: After placing the saccharin with concentrated nitric acid in a small porcelain dish, evaporate to dryness on the water bath, or by moving the flame of a spirit lamp to and fro under the dish, blowing on the surface occasionally to facilitate evaporation, and taking care that the heat does not rise too high. If the dish is allowed to cool and a few drops of strong solution of potash in 50 per cent alcohol are added to the residue, a faint yellow color only will be developed. Spread the liquid over the surface of the dish, and before it has settled to the botton, apply heat with the lamp, as above, quickly all over the under surface of the dish. If the vapor of alcohol happens to ignite, it must at once be extinguished. A greater variety of colors will be developed in this way than by following the directions formerly given. As the dish cools and moisture is absorbed, the colors fade; by heating they can be reproduced, but not in the same perfection as at first. [See also page 214.]—*Chem. News*, Sept. 28th.

### Loco Weed and the Importance of Scientific Investigation.

(From a paper read by Prof. L. E. Sayre, of Kansas, at the Detroit Meeting of the A. P. A.)

AT the outset I deem it expedient to offer an apology for the heading which states the subject of this paper. It was my original purpose to present to the Association a paper upon the subject of loco weed in the usual form which characterized literature of this nature brought before a scientific organization. Accordingly, I took up the subject for investigation in the usual way, but found, after much research, a surprising condition of affairs which justifies me in using the above caption. The object of this paper, therefore, is not only to give the results of my researches, but at the same time to call especial attention to the importance of scientific investigation for the purpose of distinguishing between hearsay evidence and that obtained by the sifting method of modern science.

When I first went to Kansas, some three years ago, I found that loco weed had been exciting much public attention, on account of its alleged poisonous effects upon cattle who pastured in the locality where it abounded. Loco weed was regarded by all as a destructive poison, damaging to the cattle interests of the West. So many complaints in fact were received concerning the immense loss to the ranchmen from this pest that the legislature of Colorado finally enacted laws for its suppression by means of a wholesale eradication of the plant from the soil of that State. The following is from the act passed May 1st, 1888.

"Any person who shall dig up, not less than three inches below the surface of the ground, any loco or poison weed during the months of May, June, July, shall receive a premium of one and one-half cents per pound for each pound of such weed dug up. To be paid out of the State Treasury, as hereinafter provided. Provided that such weed shall not be weighed in a green state, but shall be thoroughly dried when weighed."

There are other sections to the act referred to which relates to the claimants producing the weed, etc. The oath required to be taken by the claimant was as follows: "I do solemnly swear or affirm that the weed here produced by me this day is loco or poison weed," giving the number of pounds dug up within two months last past. The remainder of the act relates to weighing, recording of oath, etc.

In looking over the records, I found the following as showing the distribution of funds for this purpose, during the years 1885 and 1886, which will indicate the portions of Colorado in which this pest was supposed to be most felt: Chaffee County, $1,104.07; Costilla County, $5,805.89; Custer County, $6,156.98; El Paso County, $15,638.05; Fremont County, $968.43; Huerfano County, $9,144.89; Las Animas County, $8,182.91; Ouray County, $1,384.55; Pueblo County, $4,176.32; Saguache County, $11,260.47. Making a grand total for the years 1885 and 1886 only of $63,928.56. In an interview which I had recently with the State Treasurer of Colorado, he informed me that about $200,000 has already been expended by that State for the purpose of carrying this law into effect. It will be seen, therefore, to what enormous proportions the importance of this subject had grown in the public estimation, and as can well be imagined, when I was asked to investigate the nature of the poison and its effects as a toxic agent, I felt, by so doing, I was taking up a work which might give results of the greatest consequence to all concerned.

After an immense amount of research to ascertain the nature of the poison of loco weed, I have been gradually led away from the path first mapped out by an unexpected turn of affairs. It is a grave question whether the loco weed is a poison at all. In fact, it is a question whether the animals said to have been poisoned with it in such immense numbers as to justify the State of Colorado spending $200,000 for their salvation from the dread scourge, have not died from some other cause.

I will now give you some of my experiences in conducting this investigation, during the vacation of the University with which I am connected. In the year 1886, between June and September, I took the opportunity offered of visiting numerous cattle ranches in the State of Kansas. Each year since that time I have made many similar trips over a considerable territory in the West in no man's land, across the Western portion of the State of Kansas, and a large portion of Colorado, the last summer travelling over a portion of the Indian Territory for the purpose of visiting and collecting information from ranchmen, farmers, and others who had practical experience with the loco weed. I at the same time had in view the mapping out of the extent of the growth of the plant, and ascertaining the amount of damage done by it to cattle, horses, and sheep.

In starting out on my last trip, I arranged with Prof. Burleigh (professor of veterinary science at the U. S. Experimental Station, at Manhattan, Kansas) that he should come to my assistance in any portion of the territory described, if I should find an animal suffering from the loco poison, the understanding being that he would make ante-mortem and post-mortem examination, that we might report together the phenomena resulting from the poison. One of my first experiences was as follows:

Being informed by a gentleman who had large cattle interests that at his ranch, a number of miles distant, I would find an animal showing all the signs of blood poisoning, I started out for the purpose of making investigations. I travelled all day over a rough country, went through all the experiences of a tenderfoot, lost my way on the prairie, and I finally came to the ranch referred to. There I partook of the sumptuous repast spread for me, after dinner drove out to the herd and a horse was there pointed out which was said to be "locoed." I am sorry I did not have with me a photographic apparatus, as I think the picture of this animal would be interesting. I never saw before a skeleton breathing the breath of life, as was the case in this instance, but notwithstanding the most horrid condition of the animal, there was no evidence of loco poisoning present.

It may be well here to briefly state the symptoms exhibited by an animal said to be "locoed." The first symptoms are those of hallucination. When led or ridden up to some trifling obstruction, such as a bar or rope lying in the road, he stops short, and if urged forwards, leaps over it as if it were a fence four feet high. All sense of dimension seems to be lost. A barn near at hand seems far away and one a mile off appears near at hand. He will go headlong against any obstruction or over a precipice, unconscious of the proximity of the danger. He may permit one to approach him, but is likely to run away as though frightened, and then suddenly stop short, stare, and return to his former position. Any sudden and violent motion made before the animal's eyes, such as throwing up the arms, may cause him to fall to the ground through sudden fright. Sometimes the animal is seized with a frenzy, and then is uncontrollable and dangerous. The eyes during the frenzy are turned upwards, exposing the whites which are strongly injected. These seizures may be provoked by anything which excites the animal. In addition to these symptoms, the locoed animal generally loses flesh; his gait is feeble and uncertain, eyes sunken, flat and glassy, coat rough and lustreless. He will not be led, and attempts of this kind results in obstinate resistance.

One particular symptom which the ranchman mentions as indicative of a locoed condition is the loss of sense which guides it in finding water. On the prairie, water is found by native animals sooner than by man. A cow, for instance, raised upon the prairie, no matter how far away she may be when she is thirsty, will go to the stream in the shortest and most direct way instinctively. This peculiar instinct is possessed by them to a remarkable degree, but if locoed, this sense is entirely lost.

Now during the past three years I have travelled over a large portion of the west where the loco plant is said to ravage the stock. I have visited ranch after ranch, inspecting the herds, and looking for cases of poisoning, but, either owing to the season of the year, or to some unexplained reason, I have been unable to satisfy myself in regard to the nature of the few cases found, either because the symptoms were so unlike those described as due to the poison, or because in the instances that came under my observation, the symptoms might be assignable to some other cause.

Time will not permit me to give you the results of the many observations I have made in conducting this investigation. It may be interesting, however, in this connection, to refer briefly to an ante-mortem and post-mortem examination secured in one case, where the animal was supposed to be suffering from loco poisoning. The case in question was that of a cow four years old. During this time she had been pasturing on grounds where this weed grows. The poison is a slow one, acting year by year during the time of pasturing, so that the case may be under its influence several years before the poisoning results in death. I found this animal stunted in growth, and presenting all the symptoms of malnutrition. She seemed stupid, as though suffering from the influence of a narcotic, which by the way is said to be one of the symptoms of loco poisoning. Whether walking or standing, she was in constant tremor and seemed hardly able to stand from excessive weakness. It is not necessary to detail the results of the post-mortem examination. They will be found in the Transactions of the Kansas Academy of Science, Vol. X., page 69. Suffice it to say that the pathological condition found could be accounted for without attributing it to loco poisoning.

I have given a full description of the loco plant, and a report of its chemical examination in the publication above referred to, and in papers which have been published in the Biennial Report of the Kansas State Board of Agriculture, 1885 and 1886, and in a report of the meeting of the Kansas State Pharmaceutical Association for 1888, so it is not necessary to repeat them here, especially as the plant is sufficiently described in botanical manuals. I have, however, specimens with me of three leguminous plants, each of which in different localities is said to be loco.

The specimen which I show here, said to be loco weed, is one I found growing on the Rocky Mountains, and differs from the *Astragalus mollissimus* which is commonly recognized as the loco plant. The leaves are arranged dif-

ferently, the pod is hairy, but in other respects it resembles the mollissimus. This specimen is probably *Astragalus* Bigelovii. The genus Astragalus is truly a western genus. East of the Mississippi there are about sixty-four. During the past summer it has been my object to specially study the geographical distribution of the plant. I have visited numerous sections of the country and had interviews with cattle- and ranchmen in different parts of the Indian Territory, No-man's land, the western part of Kansas, Colorado, and New Mexico. The plant in the State of Kansas begins to appear on the southern border about Medicine Lodge, at about the ninety-ninth meridian, extending into the Indian Territory, in almost a direct line south, and into the State of Kansas in rather a northwesterly direction, from this eastern boundary line, it grows plentifully until the mountains of Colorado are reached. And the growth of the plant assumes a considerable importance south of the Arkansas River, extending down nearly to the southern border of New Mexico, the western boundary line being indicated by about the one hundred and ninth meridian.

In this area there are found three distinct plants of this order having physical resemblances which are known as loco. The most important one is the *Astragalus mollissimus*, the second the *Oxytropis Lamberti*, and the third which I have mentioned, which is probably the *Astragalus Bigelovii*, I have had sent to me. However, numerous other weeds claim to be genuine loco. Among them are *Malvastrum coccineum*, *Sophora sericea*, and *Amarantus altus*.*

It is most important to state that no toxic effect was observable when the plant was administered to frogs, cats, dogs, or the human species. This does not correspond with the observation made by Dr. Isaac Ott, however. His experiments were conducted with a preparation consisting of an acidulus aqueous solution, obtained by evaporating the alcoholic tincture, and exhausting the extract remaining with water acidulated with acetic acid. Dr. Ott's experiments seem to indicate toxic properties.

Feeling very certain that the specimens which I had secured possessed no poisonous properties, after testing on animals, I concluded to try some experiments on myself. Commencing cautiously with a dose of 15 minims of an alcoholic preparation of the strength of a fluid extract, which I took every three hours, I gradually increased the dose to two teaspoonfuls, and would have continued had it not been for the disagreeable effects of the alcohol. A tablespoonful of the preparation, made according to the plan pursued by Dr. Ott, produced no noticeable effect, except possibly that of slight uneasy sensation in the stomach and a slight undefinable sensation in the head.

It will be seen, then, that, in spite of all the dangerous properties ascribed to loco weed, it is probably possessed of no poisonous properties whatever. In passing, I may say, I am confirmed in this opinion by Mr. Kennedy, who has recently written from San Antonio (*Pharm. Record*, July, 1888). The results, therefore, will be observed to have been negative. But they have been more or less instructive and important. If I shall be able finally to prove beyond all peradventure that loco weed has no poisonous property whatsoever, I shall have very forcibly illustrated the point of this paper, namely, the vast importance to the public of a thorough scientific investigation which the professional pharmacist should be able to make.

The majority of mankind draw this conclusion from hearsay evidence without investigation. In this case the evidence has been of such a nature that the legislature of Colorado was evidently deceived, although it must be supposed that this body contained men of great wisdom and judgment.

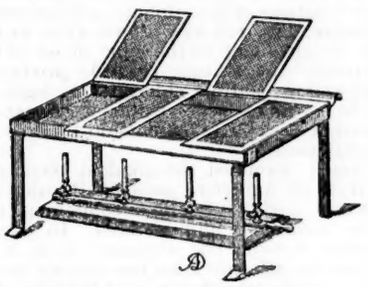
Then, too, observe the amount and extent of the investigation necessary to determine a point which any one not acquainted with the unreliability of hearsay evidence would naturally suppose could be settled without any difficulty whatever. Even now, after my laborious and expensive work upon it, the point cannot be accepted as a settled one, whether loco is poisonous to cattle or not. Changes in food often seriously affect stock, as is well known, and it may be possible that cattle who have been deprived of green food, and half-starved all winter, when they are turned out to luxuriant pasturage in the spring, are affected with indigestion and the evils of malassimilation on account of overfeeding; and this particular plant may be of such a character as to produce these symptoms in a very natural way, on account of its peculiar nature as a food, as I have pointed out in former papers. In this connection, the State veterinarian of Kansas has written a paper, which was published in the *Globe Democrat*, calling attention to the subject of "Equine Dyspepsia," in which he refers to nervous phenomena, which I would observe might easily be attributed among the unenlightened to poisonous food and charged to loco. . . .

**Chicago College of Pharmacy.**—At the meeting held September 18th, $20,000 were appropriated for current expenses, and the announcement was made that the Illinois Pharmaceutical Association had accepted the transfer to it in trust of the College. Mr. C. S. Hallberg was elected a trustee to take the place of Mr. F. M. Schmidt resigned.

* See papers on Loco Weeds in NEW REMEDIES, 1879, 232; 1881, 67.—ED. AM. DRUGG.

## A WIRE-GAUZE HEATING FRAME.

When a considerable number of flasks, etc., are to be heated or kept warm at the same time, the apparatus devised by F. Muck, and here illustrated, may be employed. It consists of a frame made of hoop or band iron, standing upon four legs, and having a double top of wire gauze, the upper one being made in sections which may be hinged back. The wire gauze has thirty meshes to one lineal inch. The distance between the two wire-gauze surfaces is one and one-eighth inch. Flasks, beakers, etc., set upon the lower wire gauze, are heated strongly, those set on the upper one only moderately.—*Chem. Zeit.*

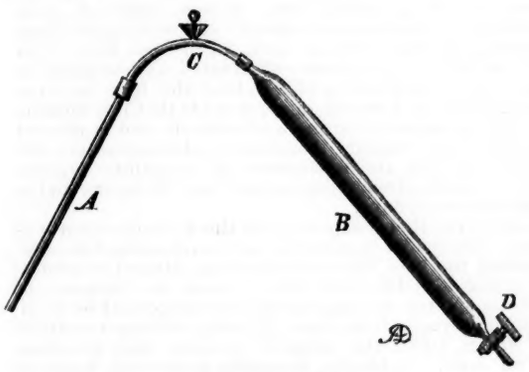


Muck's wire-gauze heating frame.

## AN IMPROVED SIPHON.

The siphon here shown was exhibited to a reporter of the *Pharmaceutische Zeitung* by the firm of L. Barthels of Hamburg.

The siphon is filled by dipping leg *A* into the liquid, closing the stop-cock at *D*, and then pouring enough liquid into the funnel *C* to fill the interior completely. On closing *C* and opening *D*, the flow will continue automatically.




An improved siphon.

## Isatropyl-Cocaine, a Secondary Alkaloid in Coca.

Prof. C. Liebermann some time ago received from Dr. Fritz Giesel about one kilogramme of an amorphous base obtained as a secondary product in the manufacture of cocaine from coca leaves. This represented that portion of the entire amount of secondary bases which resisted the action of permanganate. It appeared in form of a yellow, tough, sticky mass, from which the alkaloidal base could be easily extracted. The crude mass was dissolved in dilute hydrochloric acid, the solution filtered, and the latter carefully shaken with ether, which removed considerable quantities of oil of bitter almonds. From the solution of the hydrochlorate of the alkaloid, the remaining ether was expelled by a strong current of cold air, since it had been ascertained that the application of heat to expel the ether would be improper, as it caused a partial decomposition of the alkaloid. From the remaining aqueous solution, the alkaloid may now be precipitated by solution of soda or ammonia. It appears then in form of a white, cretaceous, amorphous substance, which may easily be dried upon previously ignited porcelain to a snowy white, loose powder. Since it was doubtful whether the substance was homogeneous throughout, and neither the base nor its salts could be crystallized, it was redissolved, and precipitated in fractions. The middle fraction was the main one used for the investigation, but the preceding and ulterior fractions did not appear to be materially different. The middle fraction amounted to about 70 per cent of the original quantity. In the course of the preparation of this purified fraction, it was found that the original crude alkaloid contained about 1 to 2 per cent of ecgonine.

The selected middle fraction was once more dissolved, again precipitated, and the precipitate examined for ash, when it was found that there was no difficulty whatever in depriving it of the inorganic salts generated during solution in an acid and precipitation by a base.

The base had a great resemblance to cocaine, except that it was amorphous (also its salts). It is easily soluble, in the cold, in alcohol, ether, benzol, and chloroform, and on evaporating these solutions, it remains behind as a resin. In petroleum ether, however, it is difficultly soluble, wherein it differs greatly from cocaine, which is notably soluble in this liquid and crystallizes from it in handsome needles, while the above alkaloid remains behind in an amorphous condition. The author therefore used petroleum ether to free the amorphous base from traces of cocaine. Ammonia also dissolves cocaine more readily than the amorphous alkaloid.

Among tests given by the author, the following may be mentioned. Picric acid produces a yellow precipitate. Chromic acid causes an orange red one; permanganate, even in dilute solutions of the sulphate, a violet precipitate, gradually passing into red and brown, even in the cold, without the development of the odor of oil of bitter almonds. Mercuric and stannic chloride produce white, gold chloride yellow, platinic chloride very light colored, amorphous, heavy flakes which can be well washed. The alcoholic solution of the base exhibits no alkaline reaction with phenolphthalein.

Prof. Liebreich examined the alkaloid physiologically and found it to be an *active poison.* Possibly it is the cause of certain toxic symptoms sometimes observed when impure cocaine is administered. In effect it resembles neither cocaine nor atropine; it is a cardiac poison, and has no influence upon the sensory nerves.

Prof. Liebermann's attention was at this time drawn to several papers of Dr. Hesse, in the *Pharm. Zeitung* (1887, 407; 668), in which the latter announces the existence in coca of two amorphous bases, which he calls cocamine and cocaidine, and which he states have the same ultimate composition as cocaine. At first, Prof. Liebermann thought that his base was identical with one of these, but subsequent investigation showed that his base was entirely different, and, besides, had the composition $C_{19}H_{23}NO_4$, while cocaine and Hesse's amorphous alkaloids correspond to $C_{17}H_{21}NO_4$.

To determine the constitution of the body, Prof. Liebermann heated a portion of it with concentrated hydrochloric acid in a sealed tube. It was, however, soon found that the same decomposition could be brought about by heating the base for one hour in an open flask, with reflux-condenser, in contact with diluted hydrochloric or diluted (10%) sulphuric acid. Indeed, the base is so extremely sensitive towards mineral acids that if a solution of it with an excess of strong hydrochloric acid is allowed to stand at the ordinary temperature, decomposition (observable through the separation of crystalline organic acids) proceeds already during the first 24 hours, and is complete after 14 days.

It was found that one product of the decomposition was methyl. This could be collected in form of methyl-alcohol, by boiling the base for some time with diluted sulphuric acid under a reflux-condenser. Under the influence of certain acids, the decomposition is accompanied by peculiar phenomena. If the base be boiled with hydrochloric acid (sp. gr. 1.100), the solution remains clear for about half an hour. Suddenly, insoluble acids will begin to separate and in a few minutes the contents of the flask will be a thick magma. The reaction is then soon terminated.

The separated acid was found to be composed of two distinct acids, which were examined by Prof. Liebermann and found to be very closely resembling the alpha- and beta-isatropic acids, discovered by Lossen and Fittig. He denominated them, respectively, gamma- and delta-isatropic acid. Both have the same composition, $C_9H_8O_3$, but different properties. Their relationship to atropic acid remains to be cleared up. It will be noticed that these acids contain no nitrogen, the whole of this remaining in the other product of the decomposition. To isolate this, the solution (in which alkalies produced no precipitate, showing that the base was soluble in water) was evaporated to dryness, and the crystalline mass freed from adhering liquid upon porous porcelain. It was now found that, if the attempt was made to use soda for setting the base free, the latter was injured. Hence Prof. Liebermann used oxide of silver to accomplish this (of course, the acid in combination with the base was hydrochloric, which forms insoluble chloride of silver with the oxide). On final separation, the base was obtained in clear colorless crystals, and turned out to be ecgonine, $C_9H_{15}NO_3$.

As a general result of the investigation, it may be stated that the crude base originally taken in operation was found to consist of equal molecules of methyl alcohol, isatropic acids, and ecgonine.

When cocaine is split up by decomposition, benzoic acid appears as the acid product. In the case of the akaloid above described, isatropic acid takes the place of benzoic. For this reason, the author has named it *isatropyl-cocaine.*

The author proposes to prepare synthetical cocaines by varying the acid.

In a postscript the author announces that he, in conjunction with Dr. Giesel, have recently found that other secondary alkaloids of coca also easily yield ecgonine as a decomposition product under the influence of acids. They have also succeeded—against the statement of Merck, who failed to succeed—in converting ecgonine into benzoyl-ecgonine, and they expect, by employing Einhorn's method of converting benzoyl-ecgonine into cocaine, to devise a technical process for converting ecgonine into cocaine. [This would enable manufacturers to turn a useless by-product into an article of value.]

### English-distilled Oil of Japanese Peppermint.

Mr. John Moss, F.C.S., read the following paper at the late meeting of the British Pharm. Conference:

I have recently distilled 205 lbs. of green herb of Mentha arvensis, grown partly in my garden, close to the Mitcham peppermint fields, and partly in a garden four miles farther away. This is the plant which yields Japanese oil of peppermint. The original slips were kindly furnished by Mr. Thomas Christy about two years ago.

The yield was 4 ounces, being about ½ of 1 per cent, somewhat less than half the yield obtained at Mitcham. Had the plants been allowed to remain till in full bloom in September, the yield would no doubt have been much greater, but having grown so luxuriantly as to be somewhat of a nuisance, they were collected Aug. 14th, when they had attained a height of three feet, and distilled on the 16th.

The oil, after standing for a week, was brilliant, and had a decided yellow color. The specific gravity at 62° F. was 0.9107.

When determining the boiling point, a light shower of very minute bubbles began to ascend at 339° F.; at 342° F., the shower was closer and remained steady for a quarter of a minute; at 369° F., it was still denser and composed of larger bubbles, and stayed quite half a minute; at 402° F., with the barometer at 30 in., there was a steady tropical rain of large bubbles, which continued for ten minutes, and the boiling point was deemed to be determined.

The specific gravity of the oil, after determining the boiling point, was found to be 0.9117 at 62° F.

Other specimens of oil distilled in England from imported herb, which was, of course, dry, were different in appearance and physical properties from that distilled by myself. They were some months, at least, older. One labelled "Non-rect." was distinctly green, and had a specific gravity of 0.9167 at 62° F.; a second labelled "Rect." was pale in color, with a faint green tinge, and had a specific gravity of 0.9098. They were fatter-looking oils than mine, and no doubt owed to their higher gravity and greater viscosity to resinification by age.

The specific gravity of these three oils confirms Todd's generalization that the specific gravity of pure oils falls between 0.908 and 0.917. Each of them is miscible with any porportion of rectified spirit. The odor of the oil from English-grown herb was much more powerful and penetrating, yet softer, than that distilled from imported herbs.

None of the three oils gives any coloration when subjected to the test given by Todd. It consists in adding 1 drop of oil to a mixture of 25 drops of alcohol with 1 drop of nitric acid, 12. After a longer or shorter interval, sometimes a few hours, a permanent blue or bluish-green color is developed if oil from M. piperita be used. The test is exceedingly delicate. It is unfortunate that we possess none for the cheap Japan oil and can only, after many experiments, estimate the proportion of it in a mixture by the weakened response of the true oil present.

The object of this note is to place on record certain characters of Japan oil of peppermint of undoubted genuineness.—After *Chem. and Drugg.*

### On Sublimate Dressings and their Gradual Deterioration.

M. Haupt, of Varel, Germany, writes on the above subject in the *Pharm. Centralhalle* (Sept. 20th). His paper presents several new and important facts, which are here given in abstract.

The author's attention having been drawn to the apparent gradual deterioration of sublimate dressings, he first prepared a series of strictly standard dressings in accordance with the army medical regulations, and afterwards subjected them periodically to analysis. Among all processes proposed for such an assay, he found C. Denner's method (conversion of the sublimate into sulphide, and of the latter into iodide, by means of normal solution of iodine) the most advantageous.

For the purpose of extracting the prepared fabrics, the latter are introduced into large, wide-mouthed bottles, a weighed quantity of hot distilled water is added, and the whole well stirred with a glass rod. After half an hour, the liquid is pressed out, and a definite part of it—taking in consideration the amount of glycerin contained in it—is weighed off. When the amount of liquid adhering to the fabric has thus been determined, the latter is replaced in the bottle, strong chlorine water is added, and afterwards enough distilled water to restore the previous weight. When this second maceration has been continued some time, the liquid is pressed out, and the sublimate estimated in such a quantity of the united liquids, as corresponds to *one-half* of the total quantity added.

The result, of course, corresponds to one-half of the weight of the fabric. But a correction must be made for the amount (one-half) of sublimate which failed to be ex-

tracted by the first maceration, and was converted into sublimate, and extracted by the second step of the process.

Next follows the determination of the mercury, for which the author prefers Denner's method. [But almost any of the usual methods of estimating mercury will answer, in our judgment.—ED. AM. DR.]

The author next gives a table which shows the quantities of sublimate he obtained by the first and second maceration, respectively, in a various dressings, namely: 1, sublimated cotton; 2, sublimated mull, and 3, sublimated gauze.

All samples were made at the same time, containing 0.4 per cent of sublimate. The series II. was examined when a month older than series I.; III. was examined a month after II; IV. was examined after five months, and V. after seven months. The letters *a* and *b* denote, respectively, the first (a) and second (b) extraction.

| | | Cotton. % $HgCl_2$ | Mull. % $HgCl_2$ | Gauze. % $HgCl_2$ |
|---|---|---|---|---|
| I. | a. | 0.298 | 0.257 | 0.215 |
| | b. | 0.030 | 0.072 | 0.113 |
| II. | a. | 0.272 | 0.204 | 0.192 |
| | b. | 0.054 | 0.122 | 0.135 |
| III. | a. | 0.217 | 0.187 | 0.138 |
| | b. | 0.108 | 0.138 | 0.184 |
| IV. | a. | 0.189 | 0.169 | 0.075 |
| | b. | 0.136 | 0.155 | 0.246 |
| V. | a. | 0.161 | 0.129 | 0.068 |
| | b. | 0.158 | 0.191 | 0.251 |

On examining these figures, it will be noticed that, on adding a and b of each set together, there was never found more than 0.33 per cent, instead of 0.4 per cent, of sublimate. The author suspected that the balance was lost by evaporation during the drying. Experiments specially made for this purpose showed him that, on drying such impregnated fabrics by exposure to air, about 16 per cent of the employed sublimate is lost by volatilization. For a quantity of 0.4 per cent, this amounts to about 0.065, leaving 0.335 per cent, almost exactly the highest amount actually found.

It will also be noticed that the loss of sublimate and the rate of its reduction increases by time. The rate of reduction [to calomel probably] was most pronounced in the case of sublimate gauze, which contained after seven months only about one-fourth of the original quantity undecomposed.

The author found that sublimate dressings prepared with the aid of chloride of sodium or tartaric acid, though they lost some mercury during the drying process, yet retained all the mercury in a soluble form even after three months.

## Notes on National Formulary Preparations.

(Continued from page 162.)

FORM. 390, *Warburg's Tincture* and 290, *Warburg's Pills.* Mr. Theodor Louis, of New York, draws our attention to a discrepancy between the amount of aloes in equivalent quantities of the tincture (N. F., No. 390) and the pills (No. 290). He writes: "In the tincture 'with aloes,' 28 grains of aqueous extract of aloes is directed to be added to 16 fl. oz., while in the pills there is 1 grain of the extract in about 5 grains of mass. Would not ¼ grain be more in harmony with the proportion of aloes in the tincture?"

Our friend and correspondent is quite correct in his criticism. If 1 pint of the tincture is to contain 28 grains of aqueous extract of aloes, then one of the pills, made with ingredients in the same proportion as the tincture, should contain ¼ grain of the extract.

There is, however, something more to be said about these preparations. The original formula of Dr. Warburg directed just 4 times as much Socotrine aloes as of rhubarb or angelica. Hence, to make one gallon of the tincture "with aloes," for which formula No. 390, I., directs 448 grains of rhubarb, 1,792 grains of Socotrine Aloes would be required. Or, reckoning that Socotrine Aloes yields 25 per cent of aqueous extract, 448 grains of the aqueous extract would be required for 1 gallon of tincture; hence 56 grains for 1 pint. Now formula 390, II., directs only 28 grains. This figure has been chosen because information reached the committee that this was the quantity usually employed by prominent manufacturers, owing to recommendations of physicians who found the preparation too intensely bitter when made with the full amount of aloes. On the basis of 56 grains of extract of aloes for each pint of tincture, the quantity of extract in the pill (No. 290) would be ½ grain; but, when the strength in extract of aloes is reduced one-half, that is, on the basis of 28 grains to the pint, the quantity in *one* pill should be ¼ grain.

2. *Acidum Carbolicum Iodatum.*

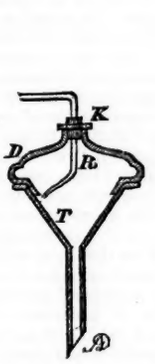
It will be necessary either to reduce the amount of iodine or to omit the glycerin, as the former does not all remain in solution when the preparation becomes cold.

54. *Elixir Eriodictyi Aromaticum.*

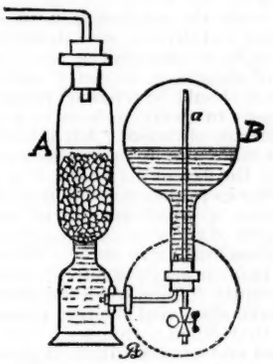
It will be well to note the fact that 1 fluidrachm of this preparation is about the proper quantity to cover the bitter taste of 5 grains of Sulphate of Quinine.

## AN IMPROVED FUNNEL FOR AUTOMATIC WASHING OF PRECIPITATES.

G. NEUMANN has devised the funnel shown in the accompanying illustration for the automatic washing of precipitates. The funnel *T* is closed on top by means of a ground cover, *D*. The wash-fluid flows from a reservoir through the tube passing through the cover against the upper inside wall of the funnel, or within-contained filter. The funnel is set into a flask connected with the filter pump, and the latter so regulated that a uniform level of liquid is maintained in the filter.—*Chem. Centralh.*, No. 38.




Neumann's washing funnel.




Sulphuretted hydrogen generator.

## SULPHURETTED HYDROGEN GENERATOR.

P. CHAUTEMILLE uses the apparatus here shown, in which the connecting tube between the two parts must necessarily be quite strong, much more so than the cut would indicate.

When the generator *A* is to be filled with sulphide of iron, the flask *B*, which contains the acid, is brought to a horizontal position. When gas is wanted, the flask is raised, as shown in the cut, whereupon the acid will rise in the generator until it reaches the sulphide. The flask may be emptied of liquid by opening the stop-cock at the neck. —*Chem. Centralh.*

## Clarifying.

CLARIFICATION is a process by which any solid particles suspended in a liquid are either caused to coalesce together or to adhere to the medium used for clarifying, that they may be removed by filtration (which would previously have been impossible), so as to render the liquid clear.

One of the best agents for this purpose is albumen. When clarifying vegetable extracts, the albumen which is naturally present in most plants accomplishes the purpose easily, provided the vegetable matter is extracted in the cold, so as to get as much albumen as possible in solution.

Egg-albumen may also be used. The effect of albumen may be increased by the addition of cellulose, in form of a fine magma of filtering paper. This has the further advantage that the subsequent filtration is much facilitated.

Suspended particles of gum or pectin may be removed by cautious precipitation with tannin, of which only an exceedingly small amount is usually necessary. It combines with the gelatinous substances better with the aid of heat than in the cold. There must be no excess of tannin used.

Another method of clarifying liquids, turbid from particles of gum, albumen, pectin, etc., is to add to them a definite quantity of alcohol. This causes the former substances to separate in more or less large flakes. The quantity of alcohol required varies greatly according to the nature of the liquid. It should be determined in each case by an experiment on a small scale.

Resinous or waxy substances, such as are occasionally met with in honey, etc., may be removed by the addition of bole, pulped filtering paper, and heating to boiling.

In each case, the clarifying process may be hastened by making the separating particles specifically heavier, that is, by incorporating some heavier substance, such as talcum, etc., which may cause the flocculi to sink more rapidly, and to form a compact sediment.

*Clarifying Powder for Alcoholic Liquids.*

Egg-albumen, dry..... 40 parts
Sugar of Milk..... 40 "
Starch..... 20 "

Reduce them to very fine powder, and mix thoroughly.

For clarifying liquors, wines, essences, etc., take for every quart of liquid seventy-five grains of the above mixture, shake repeatedly in the course of a few days, the mixture being kept in a warm room. Then filter.

Powdered talcum renders the same service, and has the additional advantage of being entirely insoluble. However, the above mixture acts more energeticaly—EUGENE DIETERICH, in *Neues Pharm. Manuale* (Ed. II.).

### The Detection of Cotton-Seed Oil in Lard, etc.

FROM a paper on this subject, by Mr. Michael Conroy, read at the late meeting of the British Pharmaceutical Conference at Bath, we take the following passages, with the remark that, in our estimation, it is quite as necessary to examine the purity of the lard, for medicinal purposes, sold on our market, as that which is exported abroad.

"Fortunately, the presence of cotton-seed oil in lard is easily detected, and my object in bringing the matter under your notice is to lay before you some of the tests that I have myself tried. The first is the nitric acid test, which some years ago I had the honor of reading a paper on before the Liverpool Chemists' Association in connection with the adulteration of olive oils. It consists in heating and stirring well about ½ oz. of lard with one tenth its weight of strong nitric acid (sp. gr. 1.420) in a porcelain dish of about 8 oz. capacity, until brisk action commences, when it should be removed from the source of heat. Pure lard sets in about an hour to a pale orange-colored solid like citrine ointment; but if adulterated with cotton-seed oil, it takes a more or less deep orange-brown tint, according to the extent to which it is present. There are two drawbacks to this test, the first being that lard sometimes contains a small amount of water which reduces the strength of the acid, causing the action to be less energetic and thus leading to error. The second is that the difference in color between pure and adulterated samples is not sufficiently definite when the adulterant is under 5 per cent.

I have also tried the test proposed by M. Labiche, who says that when cotton-seed oil is treated with subacetate of lead and caustic alkali, it gives almost immediately an orange-red reaction. The author mixes equal parts of the oil and a saturated solution of neutral acetate of lead and adds ammonia, stirring briskly. The acetate of lead decomposes, and the nascent oxide reacts upon the oil, causing it to turn red. If 20 per cent of cotton-seed oil be present, the sample is said to turn red at once, lesser quantities show after some time. In my hands this test has proved an utter failure, but I think it may be due to the fact that the cotton-seed oil which I used in my experiments was highly refined; and it is quite possible that the crude oil would give this reaction.

The next test is by Ernest Milliare, and was proposed by him for the detection of cotton-seed oil in olive oil. It is an excellent test and quite applicable to lard. It is as follows: In a porcelain capsule, holding about 1 liter, 15 C.c. of the sample in question are heated to 110°. Then, whilst still continuing the heat, we pour upon the oil a mixture of 15 C.c. of a solution of soda of 30° Beaumé in distilled water, and of 15 C.c. of alcohol of 92 per cent. When the mass has become homogeneous, we add drop by drop, so as not to cool the paste and form clots, about ½ liter of distilled water. After boiling for a few minutes, the fatty acids are separated by means of pure sulphuric acid diluted to one-tenth. As soon as the separation is complete and the sulphuric acid is in slight excess 5 C.c. of the hydrated fatty acids are collected with a silver spoon and poured at once into a test tube, about 3 Cm in diamter and 12 in length. We add 20 C.c. of alcohol of 92 per cent, and heat slightly in the water-bath to dissolve the fatty acids. When the solution is effected, 2 C.c. of a solution of silver nitrate (30 Gms. in 100 C.c. of distilled water) are added, the tube is placed in a water-bath and heated until about one-third of the mass is evaporated. The tube is then removed from the water-bath. Whatever the origin of the sample, its fatty acids remain unaltered if the sample be pure. But if cotton oil is present, the silver is reduced and blackens the fatty acids which rise to the surface. In this manner, 1 per cent of cotton-seed oil can be detected in olive oil.

In using this test for lard, instead of for olive oil, as intended by its author, a brown coloration, instead of a black one, is obtained in samples containing cotton-seed oil, while pure samples remain perfectly white, and I find it better, instead of adding the ½ liter of cold water "drop by drop," to use boiling water. For delicacy and reliability this test leaves nothing to be desired, and its only drawback is the time it takes to perform.

Another test for the detection of cotton-seed in olive oil, dependent upon the nitrate-of-silver reaction, is given by Becchi as follows: 5 C.c. of the oil are mixed with 25 C.c. of 98 per cent alcohol and 5 C.c. of silver-nitrate solution (prepared by dissolving 1 Gm. of the nitrate in 100 C.c. of 98 per cent alcohol); the mixture is heated to 84° C. If cotton-seed oil be present, the mixture becomes colored; but not so if the oil be genuine. It is necessary to avoid heating by the direct flame, as other oils which may be present, such as linseed, colza, etc., will give colorations.

This, unlike the previous test, is not quite suitable for the detection of cotton-seed oil in lard, because lard sometimes contains traces of sodium carbonate, due to the fact that this substance is commonly used in washing lard that has become rancid. Slight traces of sodium carbonate decompose the silver nitrate, and the subsequent heating reduces it, causing samples of genuine lard to become darkened in such a manner that they might possibly be condemned as impure.

For several weeks past I have tried these and other tests with the object of finding the most reliable and expeditious, and my experience is that those dependent upon the reduction of silver nitrate are the best, and the following *modus operandi* has given me results that are entirely satisfactory and reliable, and only requires a few minutes' time:

1. Make a test solution containing 5 parts of silver nitrate and 1 part of nitric acid (sp. gr. 1.42) in 100 parts of rectified spirit (sp. gr. .838).

2. Melt a small quantity of the lard to be tested in a water-bath and pour about 100 grains of it into a dry test tube, about half an inch in diameter. To this add 20 grain measures of the above-mentioned test solution and place the tube in boiling water for five minutes, taking care that no water enters it.

Pure lard remains perfectly white, but if adulterated with cotton-seed oil, it assumes a more or less olive-brown color, according to the amount present. The color is best seen when the lard sets, and it saves time to put the test tube direct from the boiling water into a vessel of cold water.

The presence of 5 per cent of cotton-seed oil in lard gives a very decided olive-brown coloration with this test, and 1 per cent gives a color quite distinct from genuine lard. The addition of nitric acid to the test solution is intended to neutralize any traces of alkali or alkaline carbonate that may be present, and it also prevents a slight reduction of the silver nitrate which takes place in genuine lard. It must not be forgotten that some samples of lard might possibly contain sodium chloride, though I have never met with any, in which case the silver nitrate would be precipitated as chloride instead of reacting on the oil, but this would be at once seen by the white, curdy precipitate that would be formed."

### Notes on Oil of Rose.

AN Austrian pharmacist who recently spent a holiday by traversing Bulgaria on a bicycle writes to the *Pharmaceutische Post* the following particulars concerning the distillation and adulteration of otto of roses. The distilling apparatus generally used in the country consists of a copper container, and the distillation product is cooled in large wooden vats. One of the largest firms in Kezanlik once tried to introduce modern distilling apparatus, such as is employed in large distilleries in Germany and elsewhere, but it was found impracticable in use. Red roses are used almost exclusively for distilling, because they yield an oil of sweeter aroma, being richer in the aromatic principle of essential oils. But in order to obtain a more easily solidifiable oil, freezing at 14° C., a certain percentage of white roses is added to the red ones, such a mixture yielding a product richer in stearopten than the other. For adulteration, geranium oil, procured from Constantinople, is most frequently used. The oils are not mixed directly, but the rose-flowers are sprinkled with the geranium oil before distillation, and the adulterant is thus more intimately mixed with the genuine oil than could be the case otherwise. To make this manipulation successful, a majority of white flowers must be used. The distillers are exclusively Bulgarians, mostly small men, although they count among their number a few large wholesale dealers, among whom Paprizoglou, of Kezanlik, and Stransky and Kobaschieff, of Carlowo, are especially mentioned.—*Chem. and Drugg.*

Against the general expectation, the yield of otto of rose in Bulgaria has been a very good one this season, amounting to about 85,000 oz. The weather during the distilling period (May 22d to June 20th) and that which immediately preceded it was so favorable that an average weight of 9 okka of flowers sufficed to yield one miscal (nearly 5 grammes) of otto, while, as a rule, 12 okka of flowers are required to produce that quantity. Prices are rather lower than last season, partly because of the heavy old stock which is still held by the principal dealers, and also because the export outlook is very unfavorable. Turkey, the principal buyer, having now put a customs duty of 8 per cent *ad valorem* on otto of rose, which was formerly admitted duty free. Moreover, the Bulgarian and East-Roumelian emigrants who have settled in the Turkish vilayets of Adrianople and Broussa have founded rose plantations there, which already commence to compete severely with those in Bulgaria.

### Delicate Test for Physostigmine.

IN a paper on physostigmine (in *Pharm. Zeit.*, August 15th) Mr. Eber states that chloride of gold, or the double iodide of potassium and bismuth, or the double iodide of potassium and zinc, precipitate this alkaloid even from an extremely dilute solution of the sulphate. If the precipitation is effected on a white plate or capsule, and only 0.000001 Gm. ($\frac{1}{64000}$ grain) of the salt is present, the precipitate may still be recognized. This chemical test is, therefore, much more delicate than a physiological test. On placing in contact with one drop of a solution of the salt, containing the before-mentioned minute quantity, a drop of a 5-per-cent solution of potassa or soda, a red color will be noticed at the point of contact, due to the formation of rubreserine. When the drop dries, a yellow film is left, which dissolves again with a red color in water. If baryta water is used instead of potassa or soda, a carmine color will first be produced, and this will afterwards change to blue.

### A Curious Stink Plant.

When Mr. G. A. Farini, on his return from an exploring tour of the Kalahari Desert in South Africa (see note on page 217 of this number), arrived at Upington, he was shown a plant without leaves, resembling a cactus, the fleshy stems growing in a bunch, with a border of flowers about ten inches across, and looking as if cut out of purple-brown velvet, marked throughout with bright golden hieroglyphics. This plant was called by Mrs. Scott, the wife of the resident commissioner, the "carrion plant," and it well deserved this name, for when disturbed it emitted an odor which was perfectly unendurable. Mr. Farini had already come across the plant on his route through the desert. At one time he was attracted towards it by the brilliant golden markings on the deep, rich-toned flower head. He dug up a specimen, but as soon as it was disturbed, it threw out such a sickly odor that he nearly gave up the job in disgust. However, he persevered, and put it into the wagon, but it soon protested against the jolting of the vehicle, and emitted such a pungent stench that the driver had to get out and walk. When they halted, it was placed behind a bush, and even then its odor made Mr. Farini's companion "sea-sick," and made the former so drowsy that he was obliged to bury it bodily beneath the sand. While doing this, the narcotic effect was so powerful that he nearly fell asleep. The second time when he encountered the plant, he was inclined to give it a wide berth, but he brought home some small specimens which were placed in the charge of the authorities at Kew Gardens. According to the appendix attached to Mr. Farini's work (page 449), the plant is a species of Stapelia. Further information on this interesting plant is much desirable, and will probably be furnished by the botanists at Kew.

### Salicylic Acid as a Preservative of Volumetric Solutions.

A recommendation made some 13 years ago by F. Mohr, but apparently overlooked, has been renewed by Hugo Bornträger, viz., to add salicylic acid to volumetric solutions with a view to their preservation. Many of these solutions owe their decomposition to micrococci existing in the distilled water.

As an example, the author mentions volumetric solution of hyposulphite of sodium, which is known to be one of the most unstable solutions, and which had been treated with a small quantity of salicylic acid ("as much as the point of a knife will hold, for every liter"). In the course of 6 weeks it was frequently tested and found to have preserved its titer decidedly better than without the preservative.—After *Zeitsch. f. anal. Chem.*, 1888, 641.

### Antidote against Bite of Poisonous Serpents.

Mr. G. A. Farini, the explorer of the Kalahari Desert in South Africa (see note on page 217 of this number), relates that some of his oxen had been bitten by poisonous snakes, whereupon one of his bushmen undertook to cure them. He took a knife, made one or two incisions round the place where the bite was, which was easily seen by the swelling, and rubbed in a powder which he said was made from the dried poison-sacs of another snake. In a few hours the swelling had entirely subsided, and the cattle were as well as their half-starved state would allow them to be. Mr. Farini expressed a doubt whether this "cure" would be efficient in man, but the bushman asserted that it was. On the very next day the bushman was bitten by a full-grown capell or "spungh slange." Coolly taking out some dried poison-sacs, he reduced them to a powder, pricked his foot near the puncture with a knife, and rubbed the virus powder in just as he had done with the cattle. Then he extracted the fangs of the freshly-killed snake, drank a drop of the poison from the virus sac, and fell into a stupor which lasted some hours. At first the swelling increased rapidly, but after a time it began to subside, and next morning he inoculated himself again. That night the swelling had disappeared, and in four days he was as well as ever.

At Mier Mr. Farini obtained information from Mr. Halliburton of another antidote, in the shape of an animal, a little saurian, called the N'auboo. Every bastard or half-breed, and every native in that region carries it in a dried and powdered state. The animal is a little lizard, with rather short legs, but capable of moving along at a great speed. It is supposed to be the most deadly of all reptiles, save the little worm called kameroo. The natives pay a big price for them, often paying an ox for one. There is hardly a bastard in that part of the country who has not some N'auboo, in case either man or beast is bitten by a snake. It is said never to have been known to fail. The whole of the animal is dried and reduced to powder. When any one is bitten by a snake, some incisions are made near the bite, and the powder rubbed in. The swelling ("even in extreme cases") will gradually subside. When the natives have no N'auboo, they use the poison of any snake in a similar manner.

Mr. Halliburton assured Mr. Farini that he had often seen it applied, and always with success. Mr. Farini asked whether it might not amount to the same thing if a traveller were to carry along with him a live poisonous snake, so as to have the latter produce a second bite near one inflicted on the road by a stray snake. This question was probably asked to test Mr. Halliburton's veracity or intelligence. The latter replied that he did not know whether this would answer the same purpose; he at least would not want to try it, but he had positive evidence of the good effects of N'auboo.

Mr. Farini only succeeced in obtaining the head portion of one of these animals, which he brought back to England. This has been placed into the hands of competent authorities on the continent of Europe for physiological investigation.

### Note on the Conversion of Hyoscyamine into Atropine.

From a lengthy paper by W. Will and G. Bredig on the conversion of hyoscyamine into atropine by contact with bases, in which the effect of the latter as to intensity, duration, etc., is principally studied by means of the polariscope, we take a few passages, giving some of the results obtained by the authors.

1. The conversion of hyoscyamine into atropine by bases is a purely catalytic reaction, analogous to the inversion of cane-sugar.

2. Besides this catalytic action, there is a very slow secondary reaction, consisting in the splitting up of atropine (in the cold) into tropine and tropic acid. In more concentrated solutions, this secondary reaction takes place somewhat more quickly.

3. Atropine is an optically active base, turning the plane of polarized light slightly to the left. Approximately, $[\alpha]_D = -1.89$. If it is desired to obtain atropine as free as possible from hyoscyamine, it is best treated, in the cold, with a very dilute solution of an alkali, until the optical properties are rendered constant. Conversion into the gold-salt, and recrystallization of the latter, is a less advisable process.

4. For manufacturers of hyoscyamine and atropine it may be of interest to know that, besides the fixed caustic alkalies, sodium carbonate also causes the conversion of the former into the latter base. Ammonia, on the other hand, produces the change more slowly than any other base so far examined.—After *Ber. d. D. Chem. Ges.*, 1888, 2,797.

### Impurities in Reagents.

C. Krauch, in *Zeitsch. f. angew. Chem.*, discusses the purity of the reagents sold as "purissimum," "purum," "depuratum," etc., and shows that those terms, when applied to commercially pure chemicals, have really no definite meaning. The following is a list of "purissimum" chemicals examined and the impurities found:

Caustic potash.—Alumina, chlorine, sulphuric and nitric acids.

Caustic soda.—The same.

Ammonia.—Pyridine, pyrrol, occasionally copper and zinc.

Sodium carbonate.—Thiosulphate, arsenic, ammonia.

Sodium nitrite.—Generally pure (100 per cent).

Potassium nitrite.—Generally very impure (80 to 90 per cent).

Potassium nitrate.—Has been known to contain chlorate.

Sodium tungstate.—Chloride, sulphate, and carbonate of sodium.

Potassium chlorate.—Has been found to contain lead.

Potassium sulphocyanide.—Traces of iron and lead.

Lime.—Silica, alumina, iron oxide, and sulphuric acid.

Platinum chloride.—Often not completely soluble in alcohol.

Uranium nitrate.—Occasionally much sulphate.

Molybdic acid.—Always 10 to 20 per cent of ammonium salts.

Ammonium molybdate.—Frequently pure.

Hydrofluoric acid.—Usually not pure enough for analytical purposes.

Sulphuric acid.—Five per cent of ammonia has been found in "pure" acid.

Hydrochloric acid.—Nearly always traces of arsenic, sometimes organic chlorides.

Tartaric and citric acids.—Traces of iron, lead, lime, and sulphuric acid.

Oxalic acid.—Usually sulphuric acid and once ammonia.

Methyl alcohol.—One sample contained much acetone.

Ether.—Petroleum ether, hydroxylaldehyde.

Ferro- and ferricyanides of potash.—Usually pure.

Iodine.—Usually pure.

Nitric acid.—Usually pure.

The author, in conclusion, observes that most salts denominated in commerce "puriss.," etc., are usually impure. B. Fischer states that he had found lead and sulpuretted hydrogen in hydrochloric acid and tin in ammonia, and he, with Krauch, draws attention to the desirability of the use of standard methods, both of preparation and analysis, so that the manufacturer shall know what it is desired that he should produce, and the buyer what impurities are likely to be present.—*Journ. S. Chem. Ind.*

### Delicate Test for Saccharin.

THE most delicate test for saccharin so far known is that discovered by Ira Remsen.

A minute quantity ot saccharin is mixed with a little excess of resorcin and a few drops of sulphuric acid in a test tube. On heating, the mass turns yellow, red, then dark-green, gives out a large amount of sulphurous acid, and swells up. The heat is then withdrawn for a short time, but reapplied again two or three times, so that the mass may swell up during each heat. It is then allowed to cool, diluted with water and supersaturated with an alkali. The resulting solution will have a reddish tint by transmitted light, and a strongly green fluorescence by reflected light. This reaction permits the detection of 0.001 Gm. (ab. $\frac{1}{64}$ grain) of saccharin in 5 or 6 quarts of liquid.

In order to separate the saccharin from articles of food, or drink, or medicinal mixtures, an excess of acid must be used, as the saccharin is present in form of a soluble alkali salt. Solid and difficultly soluble substances are powdered, moistened with a few cubic centimeters of dilute sulphuric or phosphoric acid, then dried and exhausted with ether. Wines and other similar liquids are acidulated and shaken at least twice with an equal volume of ether during one hour. If fats are present, these are removed, previous to acidulation, by means of petroleum ether.—After *Amer. Chem. Journ.* [The residue left by the etheral solution, if not sufficiently pure, may be got into aqueous solution by means of a dilute alkali, the solution filtered if necessary, and the saccharin separated by an acid and by ether as before. See also page 207.—ED. AM. DR.]

### Antipyrin in Whooping-Cough.

DR. SONNENBERGER, of Worms, has drawn attention in the early part of this year to the remarkably beneficial effects of antipyrin as a remedy in whooping-cough. This announcement was made almost with reluctance, since antipyrin had already been blazoned forth almost as a cure-all, and it was known beforehand that any fresh announcements of new channels of its usefulness would be probably received with a shrug of the shoulder. And yet there seems to be no doubt now but that this remedy is one of the most reliable ones in the disease mentioned. This is not the place for an article on medical therapeutics, and those who wish to learn all the details of treatment and the mode of using the remedy should consult the author's original paper. But for the information of our readers, it may be stated that the author reports it to have the best effects when given as early in the disease as possible. If given in time, it causes the disease to "abort," so as to appear only as a mild bronchial catarrh. But even when administered in a subsequent stadium, it will quickly reduce the attack to a mild grade.

### Quinine Mask.*

MR. L. F. STEVENS, who has spent a large amount of time and labor on the search for an efficient covering of the bitter taste of quinine, enumerates first the various propositions made by others, and afterwards turns to his own experiments, of which over 100 were made, and samples of a number of which were exhibited to the Committee on National Formulary. As it is not feasible to give an abstract of those experiments which were only intermediary, and as a satisfactory practical result was finally obtained, it will be sufficient to quote the latter. This is, indeed, the same formula as that adopted for the National Formulary, but it may be reprinted here for the benefit of those who have not yet received this work:

*Elixir Eriodictyi Aromaticum.*

Aromatic Elixir of Eriodictyon.

Aromatic Elixir of Yerba Santa; Elixir Corrigens.

| | |
|---|---|
| Fluid Extract of Eriodictyon ... ..... | 1 fl. oz. |
| Syrup..... | 8 fl. oz. |
| Pumice, in fine powder..... ..... | ½ tr. oz. |
| Carbonate of Magnesium.. .....80 | grains |
| Compound Elixir of Taraxacum, enough to make | 16 fl. oz. |

Mix 7 fluidounces of Comp. Elixir of Taraxacum with the Syrup and Pumice, then add the Fluid Extract, and mix the whole thoroughly by agitation. Shake the mixture occasionally during a few hours, allow it to settle, and carefully decant the liquid into a funnel, the neck of which contains a pellet of absorbent cotton. Afterwards add the dregs and allow them to drain. To the filtrate add the Carbonate of Magnesium, and shake occasionally during several hours. Let the mixture stand at rest during 12 hours, if convenient, then decant the liquid, and filter it through paper. To the filtrate add enough Compound Elixir of Taraxacum, if necessary, to make 16 fluidounces.

Mr. Stevens adds the remark that the first treatment separates a bitter resin which remains upon the cotton filter, without injury to the other constituents of the yerba santa or to the aromatics. The after-treatment with magnesia neither adds to, nor detracts from the efficiency, merely causing the separation of some inert extractive matter and the solution of non-bitter resins, and aiding in producing a more elegant preparation.

Of this preparation, one fluid drachm mixed by agitation with 5 grains of sulphate of quinine, *without* the addition of any diluent or acid, will so cover the bitterness the quinine, that even an expert will scarcely detect it. Children take doses of 1, 2, or 3 grains of quinine, in this manner, like sweetmeats.

* Abstract of a paper entitled "Condensed Notes upon trials for a Quinine Mask," by Luther F. Stevens, of Brooklyn, read at the Detroit Meeting of the A. P. A.

### Iodoform Bituminate.

"IODOFORM Bituminate" is the designation of a combination of iodoform and tar which is introduced as being devoid of the objectionable odor of the former substance. Dr. Ehrmann has used it in various cases of soft ulcers with good results. It occurs as a bronze-like powder, which seems to have a conspicuous odor of tar, and at the same time that of iodoform is not unrecognizable. It is difficult to say whether it is likely to have any extended application or not.—*Chem. and Drugg.*

### Ptomaines as Constituents of Urine in Cystinuria.

IN a paper published in the *Berichte der Deutschen Chem. Ges.* (1888, p. 2,744), under a title ("Das Benzoyl-chlorid als Reagens") which does not allude to the most important portion of the paper, L. v. Udránsky and E. Baumann announce the general applicability of benzoyl chloride as a means of separating polyatomic alcohols from their dilute aqueous solutions.

When benzoyl chloride and caustic soda are added to even highly dilute solutions of *diamines*, the latter are converted into the dibenzoyl compounds which are entirely insoluble in water, and separate as crystalline bodies.

As an example the following may be quoted:

On shaking an aqueous solution of 1 Gm. of ethene-diamine in ½ liter of water with 10 Gm. of benzoyl chloride and 80 C.c. of a 10-per-cent caustic-soda solution, there was obtained 3.5 Gm. of dibenzoyl-ethene-diamine as a crystalline precipitate. Even from exceedingly dilute solutions this and similar compounds will separate.

Some years ago, Brieger discovered, among the products of putrefaction due to bacteria, a ptomaine to which he applied the name *cadaverine*. This was subsequently identified by Ladenburg as *penta-methene-diamine* (penta-methylene-diamine), and this was confirmed by Brieger.

Among other ptomaines discovered by Brieger, there was one having the composition of the *tetra-methene-diamine* (tetra-methylene-diamine), but which has not been proven, up to the present, to be identical with this body.

The authors of the paper here abstracted had been making systematic examinations, during some nine months, of the urine of a patient who had suffered for years from cystinuria and catarrh of the bladder. On applying to this urine the reagent just described, they found it to respond to it quite copiously. In fact, they discovered that the urine in question contained a series of diamines, among which penta-methene-diamine (or cadaverine) and tetra-methene-diamine could be sharply recognized. Fifty days' urine of the patient yielded to the authors 30 Gm. of a mixture of the crystallized benzoyl compounds, the larger portion of which (about 20 Gm.) belonged to the penta- and about 6 Gm. to the tetra-diamine. The fæces of the same patient yielded about ½ Gm. of benzoyl compounds per day, the larger proportion of these belonging to the tetra-diamine.

Repeated experiments with normal urine have shown that the latter never contains any diamines. The same has been proven in the case of normal fæces. It is possible that diamines may appear in the excretions also in other diseases, besides cystinuria, but so far nothing of the kind has been observed.

The authors have, therefore, for the first time ascertained the fact that ptomaines—or substances which have heretofore been known to be the products of bacterial putrefaction—may occur as constituents of excretions in disease. The most remarkable fact is that they occur in the urine. It is surmised that there is some connection between the appearance of these bodies and the abnormal excretion of cystin. Further experiments are promised.

### Tests for Eucalyptus Oil.

THE discussion between certain English chemists and the house of Schimmel & Co., of Leipzig, regarding the presence or absence of eucalyptol in certain kinds of oil of eucalyptus, has not get been finally terminated, but has had the effect of bringing out a number of interesting points not heretofore known.

Thus, Schimmel & Co. announce a new and delicate test to distinguish between the oil of *Eucalyptus amygdalina* and *E. globulus:*

Mix 1 C.c. of the oil with 2 C.c. of glacial acetic acid, add 1 or 2 C.c. of a saturated solution of sodium nitrite, and stir slightly. If the oil is from the amygdalina species, the separated top layer will congeal to a crystalline magma of phellandrene nitrite, but pure eucalyptol and the oil of *E. globulus* are not so affected.

The specific gravity is also a good distinguishing criterion. The *E. globulus* oil is certainly not genuine if its density is below 0.900. On the other hand, that of *E. amygdalina* rarely exceeds 0.890.—After *Chem. and Drugg.*

THE

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## EDITORIAL.

WE are in receipt of a communication from our friend, Prof. C. Lewis Diehl, of Louisville, regarding the elongated form of percolator which is generally known as "Oldberg's Percolator." He draws our attention to the fact that this improved form of percolator—illustrated on page 23 of our last February number—was the outcome of a detailed study of the process of percolation undertaken for the Committee on Pharmacopœia of the American Pharm. Association. In the Proceedings, vol. 27 (1879), p. 729, will be found a sketch of the percolator recommended on the basis of the results obtained by Prof. Diehl's experiments.

While the exact dimensions for this kind of percolator are not given in the paper just quoted, he mentions that the percolator should be just twice the usual height, and his sketch of a percolator so constructed shows dimensions that fully conform to the ideas of the more recent advocates of tall percolators.

In the Preliminary Notice to the U. S. Pharmacopœia of 1888 (p. xxxvi.), in the Chapter on Percolation, which was drawn up by Prof. Diehl, the exact dimensions for a tall percolator, suitable for the extraction of 500 grammes of drug, are given, and on the basis there given Prof. Oldberg constructed the percolators known by his name, but these differ somewhat from the officinal proportions.

Prof. Diehl informs us that he considers the dimensions given by him the most practicable for the quantity of drug contemplated, but that for larger quantities of drug, taller and proportionately narrower percolators would be desirable, and he thinks that this idea is plainly indicated in his before-mentioned study on Percolation, which he concludes (on page 730) by recommending "*simple percolation*," "*selecting for this purpose tall, slender, moderately tapering percolators.*"

We take it that Prof. Diehl merely desires it to be understood that to him belongs the priority of recommending this form of percolator, but that he does not object to have special patterns made on this principle, designated by the designers' names.

UP to within about a dozen years or so, pharmacy in Europe, particularly on the Continent, has been so exceedingly conservative that not only were novel processes, new appliances, and new forms of preparations, which had come into use in foreign countries, not adopted or introduced, but in many cases they were entirely ignored, or looked down upon as being unworthy of notice. We can well remember the time, in our younger days, when, on general principles, almost anything claiming to be of American origin was at once suspected of being bogus, fraudulent, or calculated to deceive. This notion prevailed for a long time, even among otherwise well-informed people, and it required the severe lesson taught by the Centennial Exhibition of 1876 to open the eyes of Europeans regarding the astonishing progress and development of American industry, which in many cases had so outstripped that of the foreign exhibitors that some of the products of the latter appeared to be rather as cheap toys, or as made for uncivilized nations than calculated for real practical use. The earnest representations and uncompromising reports of Reuleaux and other foreign delegates to their governments, however, though at first wounding national pride, have had the good result to remove the prejudices existing in various industries against adopting foreign and particularly American methods and appliances. We do not wish to be understood as implying that these prejudices were at that time still universally shared. This was by no means the case. Curiously enough, one of the most powerful agents to gradually dispel, even long before 1876, the old repugnance to American goods in Europe was the sewing machine, which made its way slowly but surely into the various homes, and acted as a missionary for the future.

Those who have had, like ourselves, the opportunity of witnessing the habits, and knowing the feelings of our continental colleagues, will agree with us that one of the slowest bodies to accept new ideas from this country has been the pharmaceutical profession. We refer here particularly to Germany and other continental countries where German is spoken. However, this is not to be wondered at, if we remember how much trash, in the shape of patent and propietary medicines, has been and is floating about on our market, making it almost an impossibility even for professional experts living abroad to distinguish the wheat from the chaff, and causing many of them to look upon the whole output of products as undeserving of notice.

The year 1876 undoubtedly marks an era in pharmaceutical international reciprocity. Not only were our own pharmacists made better acquainted with the old European ways and methods, but European pharmacists were, for the first time, made thoroughly acquainted with our best features and processes. Among these, the process of percolation, adapted to the preparation of tinctures, and particularly to that of *fluid extracts*, stands at the head. Though the principle of the process was first suggested in Europe many years previously, yet it was only applied, at least almost exclusively, in chemical laboratories or certain technical works. While the usefulness and expedienoy of this process were recognized by leading authorities, there were, however, serious obstacles in the way of its introduction. The principal obstacle was this, that the continental pharmacopœias prescribed the old process of macerating the drug with the whole quantity of menstruum, in the case of tinctures and similar preparations, and as this process requires no special apparatus, no expert skill, and no watching, it was not likely that pharmacists would take kindly to another process involving new appliances and demanding extra work. The fact that the old process consumed a large amount of time, compared with the new one, was hardly taken in consideration. Time—in the sense here meant—is not as valuable a commodity to the pharmacist in Germany as it is to us, because he is, to a large extent, protected against undue competition by the laws of the land.

In the course of time, certain enterprising American manufacturing firms took particular pains to draw the attention of European pharmacists to the class of fluid extracts, by making prominent exhibits at international or special expositions, by placing specimens in the hands of prominent medical experts for trial, by copious advertisements, and by other means. There can be no doubt that to these causes the more rapid recognition of the value of fluid extracts is chiefly due. It was curious, and sometimes amusing, to read papers, even coming from well-known authorities, which appeared to have knowl-

edge only of fluid extracts of the newer drugs, introduced and specially advertised by the firms alluded to, it being altogether overlooked that these preparations had been long in use, and that our pharmacopœia recognizes a large number made from the well-known, older, and universally used drugs. Gradually, however, the list of fluid extracts is extending, and it will not be long when this class of preparations will be as well made, and as generally used, in Europe as it is in this country.*

There is one point connected with this subject which we would like to draw the attention of our continental colleagues to. It is this, that we would seriously caution them not to try, *in the beginning*, to adopt new-fangled methods or apparatus, in the preparation of fluid extracts or tinctures, but to thoroughly test those which our long-continued experience has finally shown to us to be most adapted for the purpose. We do not claim that there are no further improvements possible; indeed, we shall always be on the lookout for them, and bid them welcome. But we have had a practical experience of nearly forty years in the application of the process of percolation, and have tested a multitude of variations, most of which are on record in American pharmaceutical literature. Our continental friends will probably be able to save much labor, time, and expense, if they will consult the existing literature before they strike out on a new path, which may possibly lead them to a failure which could otherwise have been avoided. We have already noticed several announcement of new percolating apparatus, from the illustration and description of which we should judge that the expected results will not be attained. Among the best we have seen is that illustrated by Eugene Dieterich, in his "Neues Pharmaceutisches Manual" (2d ed., 1888, p. 275), where the accompanying text bears evidence that the writer is thoroughly familiar with the subject. At the end of the chapter, he expressly states that no other method of extraction equals, in efficiency, that of percolation. But he adds a remark which we cannot agree to: "At the same time, no other [process] requires so much time. It will, therefore, be more suitable for working on a small scale than for operations on a large scale." Not at all; our experience has shown that the scale makes no difference. It is only necessary to use proper judgment, according to the nature of the drug, in the fineness of powder, the kind of menstruum, and the rate of exhaustion. There is no need of *always* using very fine powder, or of allowing the percolate to pass at the rate of *only* two drops per second, etc. The sole object is to exhaust the drug, and to obtain a definite volume of percolate. As long as this is accomplished, we can relax any conditions which would unnecessarily consume time.

Besides, when a preparation is in continuous demand, it would be unwise to start a new batch only when the old stock is consumed. While the last batch is being drawn upon, the new one can be made; and if it is suddenly required in unusually large quantities, it is best to subdivide it into smaller manageable portions, all of which can be worked simultaneously within the time allowed for the operation.

American pharmacists have sometimes been misrepresented by European professional writers, as being almost fanatics on the subject of percolation, wanting to apply it for everything and in every case. Any one, however, who has attentively examined our literature, will know better. We know there are certain drugs which cannot be extracted by percolation with certain menstrua, owing to swelling or other causes, and in such cases we have recourse to maceration. In fact, our aim has always been to study each drug thoroughly, and to ascertain the most favorable conditions under which all the useful and desirable constituents of a given quantity of a crude drug, of normal condition, can be gotten into permanent solution, so that the volume of the latter bears a definite ratio to the weight of the drug. In our last pharmacopœia the ratio of *weight of drug* to *volume of product* existed only to *weight of product*. We are, however, inclined to believe that the majority of the profession desires a return to the former method.

*Several of the large manufacturing houses of the continent, such as E. Merck, of Darmstardt; Gehe & Co., of Dresden, etc., prepare a considerable number of fluid extracts. The most extensive list which we have thus far seen, however, is that manufactured by the well-known combined houses of Jobst and Zimmer (firm name: Vereinigte Fabriken chem.-pharm. Producte, Feuerbach—Stuttgart and Frankfurt a. M., Zimmer & Co.), a catalogue of which has just reached us. For the information of those of our readers who are interested in cinchona alkaloids, we would add that the price-list of this firm, among others, quotes the following: Cinchonamine, homocinchonidine, hydroquinine sulphate, cinchotenidine, cinchotenine, cinchocerotin, "quinium."

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Our German colleagues have recently instituted statistical inquiries regarding the extent to which officinal or unofficinal preparations are in use in their country. The Pharmacopœia Committee of the German Pharmaceutical Association, of which Dr. G. Vulpius is Chairman, recently sent copies of a complete alphabetical list of the titles of all articles contained in the last German Pharmacopœia, which are just six hundred in number, to the directors of the pharmacies attached to the clinics of the five principal German Universities, frequented by more than one-half of all the medical students in Germany. Lists were also sent to certain veterinary institutions. The request accompanying the lists was, to cross out any article which had not been in use or demanded during the past year, and also to add the titles of such articles or preparations as had been used without being officinal. From the replies received it appears that of the 600 officinal articles, only six had not been demanded in the before-mentioned five pharmacies during that time. In addition, about 250 of the preparations officinal in the first, but not received into the last pharmacopœia, were still in use; besides about 150 older remedies which had not even been in the first edition; and finally some 200 newer remedies. Similar results were obtained by the inquiries among veterinary institutions. By actual count, there were used, during the past year, in those five pharmacies, 1,185 different articles, of which 589 were officinal in the last German Pharmacopœia, 252 had been officinal in the preceding (first) one, 157 were still older, and 187 were new drugs or preparations.

It will be seen that for about 600, or one-half of all the remedies employed, there is actually no fixed legal standard. Dr. Vulpius wishes that there were a possibility of inducing physicians to abandon old remedies which are no longer recognized, but he is not at all sanguine that this will ever be brought about. On the other hand, he would not be in favor of enlarging the scope of the pharmacopœia, by reintroducing the discarded material.

Some relief, according to Dr. Vulpius, can be rendered in two ways. In the first place, it may be legally ordered that for all articles contained in the first German Pharmacopœia which have not been received into the second edition, the text of the former shall remain in force. And secondly, for all other remedies, an agreement may be brought about among pharmacists, as to which works of reference, in the shape of supplements to the pharmacopœias or formularies, shall be commonly accepted as standards, and followed. Dr. Vulpius alludes to the fact that a similar movement has been started in this country. When writing his paper, he evidently had not yet seen the results, in the shape of the National Formulary.

The problem which our German colleagues have to face is one with which we have long been familiar, and for which the only possible solution was the preparation of some interim-standard, to be in force until a higher authority should provide a formula for any preparation contained in it. Had we not done this, we could have only attempted the next best alternative, namely, to select a number of privately published works, formularies, dispensatories, etc., which we might have agreed among ourselves to regard, for this or that preparation, as authoritative. It might have been necessary to name twenty or more different works to cover the best of all the formulas needed. And what guarantee would there have been that any new edition of any of these works would still afford us the reference wanted? We have certainly chosen the most practical solution of the difficulty, and strongly advise our German confrères to adopt the same plan we did.

We all know why old remedies do not easily disappear. Old physicians will prescribe what they have learned to use in their early days, and as many of them are exceedingly conservative, it is hard to get them to use new things. At all events, it is harder to get them to throw the old things aside. The dear public, of course, also contributes its share, and a most prominent one, in preventing many old, silly, and—as we know—valueless preparations

in the case of fluid extracts. In all other liquid preparations obtained by percolation, the ratio was *weight of drug* to die out. However, it would be useless to try to enact laws which would hinder the prescriber in his choice of remedies. It is only from a higher standard of medical education, and from a closer intercourse between the pharmaceutical and medical professions, and a more frequent interchange of views and experiences among them, that a relief will come. May it not be far off.

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THE recent publication of a very complete treatise on the art of prescription-writing gives rise to a query as to whether there is really any occasion for such an elaborate manual, and whether such an amount of detail connected with a very simple matter is not calculated to do harm and complicate the practice of writing prescriptions rather than simplify the work. Time was, before the present modes of diagnosis were in vogue, when a peculiar costume, a wig and cane, an oracular manner, and a mysterious formula were considered essential to successful practice. The wig, cane, costume, and much of the manner have gone, and the physician of the present day aims at appearing like other gentlemen. Of the elaborate formula expressed in a comparatively unknown language, almost the only remaining mystery consists in the abominable chirography which too often characterizes it. The medical student of the present time has less absolute need for instruction in Latin terminations than for manual dexterity in expressing his wants on paper.

### Correction.

PROF. C. LEWIS DIEHL draws our attention to a passage in our abstract of the preliminary part of his Report on the Progress of Pharmacy, which is printed as if it were a part of his own text, while it should have been put in quotation marks, to show that it was from other sources. Prof. Diehl informs us that he quoted very freely, for instance, from a paper in the Year-Book of Pharmacy, on "The Future of Pharmacy," and much of this appears in our report of the Proceedings (see our October number, page 182), as though it were an original expression of Prof. Diehl. It will not be necessary to do more than to mention this matter here, so that the omission of the quotation marks may not be charged to our friend, Prof. Diehl.

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**South Dakota Board of Pharmacy.**—The board, as lately reorganized, consists of D. S. White, of Flandreau, President; B. F. Stearns, of Aberdeen, Secretary; and J. L. Kreychie, M.D. The board has issued the following important notice:

1st. The Board will not allow any one to conduct a drug store, as has been done heretofore, without first becoming registered.

2d. According to the Pharmacy Law, Paris Green, Blue Vitriol, and other poisonous drugs should be sold only by registered pharmacists, and sales of same should be recorded in a poison register. Therefore it is illegal for any one, excepting registered pharmacists, to sell such drugs, and the Board will prosecute all such violations, upon a complaint being made. Every druggist is earnestly requested to report to the Secretary all violations of the law.

Every registered pharmacist is respectfully requested to comply with the following requirement of the pharmacy law: "*Every certificate of registration and every renewal of such certificate shall be conspicuously exposed in the pharmacy to which it applies.*"

It is also recommended that "Registered Pharmacist" labels, with name of dispensor, be put on all packages and articles put up or dispensed in drug stores.

**New Hampshire Pharmaceutical Association.**—The following are the officers for the coming year, elected at the annual meeting on September 25th: President, Geo. F. Underhill, Concord; 1st Vice-President, L. B. Downing, Hanover; 2d Vice-President, Gale C. Shedd, Keene; Secretary, C. B. Spofford, Claremont; Treasurer, F. A. James, Manchester; Auditor, J. Irving Hoyt, Penacook; Executive Committee, S. Howard Bell, Derry; A. D. Smith, Manchester; C. B. Spofford, Claremont.

**Ernest Wende,** M.D., B.Sc., of Buffalo has been appointed Instructor in Botany in the Buffalo (N. Y.) College of Pharmacy, to succeed Prof. Kellicott, who has accepted a professorship in the University of Ohio, at Columbus.

J. B. LIPPINCOTT & Co. have just published a new edition of the United States Dispensatory, with nearly 800 pages of new matter, including the incorporation of the National Formulary.

## CORRESPONDENCE.

### Delicate Test for Bismuth.

DEAR SIR:—I see on page 174 of the September number of the AMERICAN DRUGGIST Mr. Leger's test for bismuth. As I have frequent occasion to make tests for bismuth, in its different forms in the ores of this country, I have need of a very delicate way to test for the smallest percentages of the metal, and have employed the following, which I send with the hope that it may benefit other readers of the journal.

Powder the ore and mix 100 to 200 milligrammes with equal parts of powdered iodide of potassium and sublimated sulphur. Place it on charcoal, and use the blow-pipe. In a few minutes there will be a red incrustation on the coal. It is best to have a second piece of coal over the orifice of the one containing the mixture. I have found that assay solution containing bismuth, mixed with the above powder and heated on charcoal in the same way, will give like results. I think that as low as one-fiftieth of one per cent can be detected.

The hydrogen-sulphide test is too complicated when one has to employ the test several times a week. I have never known the test I have mentioned to fail, and its simplicity recommends it.

This method forms a preparation like the one Mr. Leger recommends. Yours very truly,

G. H. HUBERT (Druggist and Apothecary).

BEAVER CITY, UTAH, Sept. 18th, 1888.

### Qualification for License.

DEAR SIR:—In the spring of 1884, A, who is a shoemaker, invested some money in the drug business with B, who had a little experience in the drug trade.

A would come to the store once in awhile after his day's work in the shoeshop, and sometimes would sell cigars or soda, until a few weeks before before the registering law was enforced, when he bought out the interests of his partner B. A applied to the Board of Pharmacy, and obtained his certificate.

I would like to know whether he was entitled to it?

Yours truly, H.

This case happened in a town in Massachusetts, where the law establishing a "Board of Registration in Pharmacy" went into operation about October, 1885. Section 3 of the act provides that any person or firm engaged in the business of retailing or dispensing drugs, medicines, chemicals, and poison on their own account, or any others [viz., then out of business] who had had three consecutive years of practical experience at the aforesaid business, could be registered as a pharmacist by the Board.

No doubt the law would have never been passed, had it affected those already in business. It was necessary to allow the bogus pharmacist to come in with the genuine, so as to get at least the door shut for the future. In our judgment, the person alluded to had a right under the law to be registered, much as we regret it. It is much to be hoped that, by this time, he has learned to distinguish sulphate of zinc from Epsom salt, or morphine from quinine. These drawbacks are incidental to the passage of any pharmacy law, and cannot well be helped.—EDITOR AM. DRUGGIST.

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### A Perfumed Insect.

MR. G. A. FARINI, in his work entitled, "Through the Kalahari Desert,"* relates the following interesting fact, which may possibly put some of our readers on the track of a new perfume:

"Three days' easy going brought us to Ghanze without any notable incident. As we drove to the water, the fore-wheel of my wagon crashed into a bush, which at once gave out a *powerful and delicious* perfume. Jumping down to examine the cause, I plucked some leaves, but found they were scentless, as was also the stem of the plant. I could not make out where where the pleasant odor came from until I touched a small *beetle*, when out came a puff stronger than ever. The little bug was an animated perfumery store, emitting the delicious scent whenever disturbed. I caught three of them, and put them in a perforated box, in which they lived for a week, the movement of the wagon affecting them sufficiently to make them give up their fragrance in such quantities as to keep the wagon perfumed like Rimmel's. When they died, the scent died with them."

It is true that the locality where these remarkable insects were met with is rather out of the way, being situated in about 21.45° S. and 21° E. (of Greenwich), between what is known as Demara Land, and Khamas Land. But as the author is known to be reliable, and has brought back so many other remarkable novelties, there is no reason to doubt the existence of the "perfumed" insect.

* Published by Sampson Low, Marston, Searle, & Rivington. 8vo, London, 1886, p. 251. A few other interesting extracts from this work will be found elsewhere in this number.

## QUERIES & ANSWERS.

*Queries for which answers are desired, must be received by the 5th of the month, and must in every case be accompanied by the name and address of the writer, for the information of the editor, but not for publication.*

**Liquid Carbonic Acid.**—If the writer of query 2,234 in our October number will address Mr. W. B. Keller, Editor and Proprietor of the *National Bottler's Gazette*, 21 Park Row, New York, he will be put in the way of obtaining the information desired.

No. 2,241.—**Dose of Extract of Hyoscyamus** (H. O. D.).

"Will you please let me know whether the inclosed prescription [see below] deserves any criticism on account of the uncertainty regarding the amount of Extract of Hyoscasmus which might be taken? Do you think the prescriber should have specified the amount of the same?

| | |
|---|---|
| ℞ Morph. Sulph | gr. iss. |
| Ext. Belladonnæ | gr. v. |
| P. Camphoræ | gr. xlv. |
| Ext. Hyoscyami | q. s. |

Fiant pil. 15."

In reply, we would say that authorities are pretty unanimous in considering hyoscyamus as not belonging to the very potent drugs. Stillé (in "National Dispensatory") states that the *minimum* dose of the officinal extract is 2 grains, and that this should be rapidly increased until the characteristic effects are produced. In Wharton and Stillé's "Medical Jurisprudence" (by Amory and Wood, vol. II., Philadelphia, 1884, page 429), we find the statement: "The dose of the tincture is a fluidrachm, that of the extract 5 grains, as an average." Cases of fatal poisoning by hyoscyamus are very rare; in fact, there is only one authenticated case, from the year 1715, reported by Walther, and a doubtful one about the end of the last century.

It is not likely that our correspondent would want to make very large pills from the above prescription. He will, therefore, be justified, on the strength of the authorities above quoted, to use his own discretion in the amount of extract of hyoscyamus to be used. We often see prescriptions for pills by leading therapeutists, here in New York, where the quantity of extract of hyoscyamus is left blank.

No. 2,242.—**Syrup of Hydriodic Acid** (Ch. H. M.).

We published a formula for a Colorless Syrup of Hydriodic Acid on page 195 of the last volume. This is the formula which was then proposed to be introduced, and has since been introduced, into the National Formulary published by the American Pharmaceutical Association. We advise you to send for that work at once—address Prof. J. M. Maisch, of Philadelphia—as it contains not only this, but 434 other formulas which you may need in your business.

No. 2,243.—**Shampoo Liquid** (E. S.).

The readiest agent to produce a good lather upon the hair of the head is a solution of potassa or soda, or a dilute water of ammonia. The latter, however, owing to its penetrating odor, is not usually liked. The following combination will be found serviceable:

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|---|---|---|
| Solution of Potassa (U. S.) | 4 | fl. oz. |
| Borax | 1 | tr. oz. |
| Bay Rum | ½ | fl. oz. |
| Tincture of Quillaja (N. F.) | ½ | fl. oz. |
| Water | enough to make 16 | fl. oz. |

This may be scented according to taste. An increase of alcohol will reduce the lather-producing property.

E. Dieterich recommends the following preparation:

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| Fresh Eggs | 3 | |
| Spirit of Soap (N. F.) | 1½ | fl. oz. |
| Carbonate of Potassium | 160 | grains |
| Water of Ammonia | 160 | minims |
| Oil-Sugar of Cumarin | 8 | grains |
| Oil of Rose | 2 | drops |
| " " Bergamot | 2 | " |
| " " Geranium, French | 1 | drop |
| " " Almonds, essent | 1 | " |
| Rose Water | 27 | fl. oz. |

Thoroughly beat the 3 Eggs and then dilute with the Rose Water. Then add the other ingredients.

Oil-Sugar of Cumarin is directed to be prepared by triturating 1 part of cumarin with 999 parts of sugar of milk.

No. 2,244.—**Constitution of Antipyrine** (Several Inquirers).

Several authorities still continue to assign to antipyrine a chemical name (dimethyl-oxy-chinizin) and constitution which has long been given up as untenable by the discoverer, Dr. L. Knorr. In order to give to our readers the exact words of Dr. Knorr's claim, we print here the essential portion of the U. S. patent granted to him on October 28th, 1884, entitled, "Preparation of Dimethyl-Phenyl-Oxypyrazol."

My invention consists of a new product, dimethyl-phenyl-oxypyrazol, from phenyl-hydrazine, the latter yielding, as products of a series of operations, new compounds, which I have found to be valuable medicaments.

The following is a description of my method of proceeding:

By mixing the body well known as acetylacetic ether with a molecular quantity of phenyl-hydrazine, water is eliminated, and a condensation product is formed, termed "phenyl-hydrazine-acetylacetic ether," of the formula:

$$C_6H_5 - N_2H = \overset{CH_3}{C} - CH_2 - CO_2C_2H_5.$$

When this product is heated to a temperature of 100° to 150° Centigrade, until a sample perfectly solidifies on cooling or on immersion into ether, a mass will result which, after crystallization from water or from some other medium, represents pure methyl-phenyl-oxypyrazol. Its formation from phenyl-hydrazine-acetylacetic ether takes place under production of alcohol, as expressed in the equation:

$$C_6H_5N_2HC\begin{matrix}\diagup CH_3\\ \diagdown CH_2CO_2C_2H_5\end{matrix} = C_{10}H_{10}N_2O + C_2H_5OH.$$

When the methyl-phenyl-oxypyrazol thus formed is heated with methyl chloride, bromide, or iodide, it is readily converted into dimethyl-phenyl-oxypyrazol.

Dimethyl-phenyl-oxypyrazol is distinguished by the following properties: It crystallizes from ether in lamellæ of a pearly lustre, melting at 113° Centigrade. It is soluble in alcohol, water, and acids, from which solutions it is precipitated by concentrated alkalies. Its aqueous solution turns red on addition of ferric chloride, and green when a nitrite is added. When a concentrated aqueous solution is mixed with the solution of a nitrite, green crystals separate on standing.

What I claim as new, and desire to secure by Letters Patent, is:

The new product dimethyl-phenyl-oxypyrazol, the result of the process herein described, the same being distinguished by the properties herein mentioned.

No. 2,245.—**Thapsia and Silphium** (U. O.).

The only species of Thapsia used in medicine at the present day is *Thapsia garganica* L., a common umbelliferous plant of Algiers, particularly frequent in the province of Constantine. Its root, which was used in a fresh condition by the Arabs, and is even by some modern authorities stated to be injured by drying, contains an irritant resin, which is extracted in an impure form, and used in the preparation of Thapsia plaster, officinal in the French Pharmacopœia. This plaster, when applied to the skin, produces in about twenty-four hours an immense number of small miliary vesicles upon a reddened skin, without liability to spread, and also without pain.

Internally, thapsia root produces irritation of the alimentary canal and acts as a cathartic. But it has only been used so by the Arabs, and never by modern physicians.

Ancient writers report similar effects to have been obtained from a plant named by them Silphium. A juice (probably dried gum resin) was obtained from this which was also distinguished by the appellative "Cyrenaic." In fact, both the plant and its root or juice was known as *Silphium cyrenaicum*. It is highly probable that this was the plant now known as *Thapsia garganica* L. At all events, the identity of the two is accepted by most authorities, and the two names are frequently placed side by side as synonyms.

While the name "Silphium," as used by ancient authors, thus denoted an umbelliferous plant growing in Northern Africa and the Levant, Linné made an entirely new use of the name by transferring it to an American genus of Compositæ, of which there are about half a dozen species known, mostly indigenous in the Middle or Southern States. One of these species, viz., *Silphium laciniatum* L. (formerly named *Silphium gummiferum* Ell.; see Elliott, "Sketch of the Botany of South Carolina and Georgia," Charleston, 1821–1824, Vol. II., 406), has been reported by Dr. H. D. Garrison (*Eclectic Med. Review* and elsewhere) to be an excellent remedy in asthma. It has been used for the heaves or asthma in horses (Dodd, J. H., "The Amer. Horse and Cattle Doctor"). Asthma or heaves in horses is said not to exist in the prairies where this plant grows. Dr. King (in the "American Dispensatory") says that this species (which he calls "rosin weed," and which he does not regard as identical with *S. laciniatum*, or "compass weed") is, like the "laciniatum," reported to be emetic, to have effected cures in intermittent fever, and to be beneficial in dry obstinate cough. Porcher ("Resources of the South. Fields and Forests." Charleston, 1869, p. 460) adds that the "rosin weed," which is sometimes called the "polar" or "compass plant," because its leaves are said to point north and south, is said to be powerfully diuretic. An alcoholic fluid extract is recommended in doses of 20–40 drops. The dose for a horse is 2 fl. ounces morning and evening (Tilden's *Journ. Mat. Med.*, November, 1867).

If, therefore, any physician prescribes a fluid extract or other preparation of Silphium (without further specifications), it may be inferred that the American composite plant *Silphium laciniatum* is meant, and by no means the ancient *Silphium cyrenaicum* which is now *Thapsia gar-*

*ganica* and a liquid preparation of which will probably act, internally, somewhat like croton oil.

No. 2,246.—**The Keeley Motor** ("Uncap").

This subject is rather outside the scope of the AMERICAN DRUGGIST and we decline to offer any opinion as to the present status of the alleged discovery. The question: "Do you think it possible that—as Mr. Keeley claims—a single pint of water and a match is capable of giving out or producing such a tremendous force as he claims to have discovered . . . ?" is, however, worthy of consideration. In the first place, we are not aware that any such claim has ever been made by Mr. Keeley, and think that our correspondent has been misinformed. One of us has had opportunity for seeing an exhibition of the working of some of the mechanism alleged by Mr. Keeley to be influenced by the force which he claims to have discovered, and have listened to many accounts of the personal experience of others, and we do not remember to have seen or heard of the "match" or of any form of applying heat.

It seems to us very likely that Mr. Keeley has discovered *something* which furnishes a means of force hitherto unappreciated, but that he has thus far failed to reduce its use to a practical basis. Meanwhile, a fear that some one else may get hold of the principle, succeed in putting it into practice, and reap the pecuniary results has led him to exercise as much secrecy as possible and exhibit only *results*. It must be remembered that no one in this country can obtain a patent for a natural force or product, but only for the mechanism or process for applying it. It will, therefore, be understood how Mr. Keeley or anybody else would exercise a great deal of caution in allowing his secret to become the property of others, assuming, of course, that he *has* one.

Those who have any knowledge of scientific matters are aware that there are many exhibitions of force proceeding from conditions which are not well understood, and which are difficult of comprehension, and that there is nothing more remarkable in Mr. Keeley's claims for "vibratory energy" than existed in the case of steam or electricity. We are aware that the motor which refuses to *mote* and Mr. Keeley have been the butt of many jokes, and that ridicule is a very difficult thing to contend against. We are also aware that a great deal of money has been invested on the *probability* of his being able to do what he claims to be able to accomplish. We suspect that Mr. Keeley finds himself in the position of the man referred to by the *Detroit Free Press* who "bit off more than he could chaw;" and while we would caution our correspondent against any investment in Keeley stock, unless he has more money than he knows what to do with, we would also deprecate unseemly ridicule of something which is not generally understood, and mention that, before the days of steam navigation, a prominent member of the British House of Parliament said, in open debate, that he would eat the boiler of the first steamboat which succeeded in crossing the Atlantic Ocean. It is very likely that the next generation will know more than this one does about many matters, and "Keeley's motor" *may* be one of them.

No. 2,247.—**Dextrin** (St. Louis).

Commercial dextrin appears in various tints, and does not by any means usually represent a homogeneous substance. Being produced on a large scale from starch, it depends much on the source of the latter and on the process employed, whether the product approaches purity or not. The usual impurities which are present are unaltered starch, due to an insufficient reaction, or sugar, owing to a too long-continued reaction. The former may be removed by one of the processes given below. Sugar may be removed by dissolving the dextrin in water, filtering, if necessary, and precipitating with alcohol. The sugar will remain in solution, while the dextrin (and any accompanying starch) will be precipitated as a doughy mass.

The yellow dextrin of commerce, also known as British gum, is prepared by heating starch in iron vessels to a temperature of about 460° F. (440° to 500° F.). This kind of dextrin is usually free from unconverted starch, and wholly soluble in about 2 parts of water. The white dextrin is prepared by different processes, chiefly by the intervention of acids, and at much lower temperatures.

The National Formulary has adopted a formula for making Mucilage of Dextrin (chiefly as a vehicle of emulsions), in which it is specially pointed out that the *white* variety of commercial dextrin, which still contains unaltered starch, is to be used for this purpose.

If it is desired to remove free starch from dextrin, this may be done by intimately mixing 100 parts of the crude dextrin, previously mixed with 1 part of precipitated carbonate of calcium, with 200 parts of water, agitating repeatedly, macerating two days, then pouring off the clear solution from the sediment, and passing the liquid through flannel. The strained liquid is evaporated to a syrupy consistence and may then be spread on plates, dried, and reduced to powder. If the sugar is to be removed at the same time, the syrupy liquid is poured in a thin stream, and under constant stirring, into a large vessel holding 200 parts of alcohol. After twenty-four hours, the supernatant liquid is poured off, the gummy precipitate transferred to a capsule, and evaporated to the consistence of extract over a water-bath. The mass is then transferred in thin slices to plates or spread on a parchment paper, dried and powdered. The drying in either case should be done at a temperature not exceeding about 100° F.

Yellow dextrin usually contains also a peculiar dark-brown substance, probably saccharine, to which the specific dextrin odor is due. According to Dieterich, this may be removed by stirring up the dextrin (100 parts) with a mixture of 5 parts of water of ammonia and 150 parts of alcohol, allowing to macerate 24 hours, then transferring to a funnel stopped up with cotton—care being taken to lose as little alcohol as possible—and, when the liquid has run off, washing with 100 parts of alcohol poured on in about 10 separate portions. The dextrin thus purified appears, when dry, of a whiter color, and is nearly odorless and tasteless. The alcohol used in purifying dextrin may be recovered by distillation, the free ammonia being previously neutralized by sulphuric acid.

No. 2,248.—**Moth Destroyers and Preventives** (D. A O'C.).

Camphor and naphthalin are mostly relied upon as preventives against the ravages of moths. They may be either wrapped in paper and placed between layers of clothing in trunks, or paper may be impregnated with an alcoholic solution of either of these substances, and laid between the layers. In the case of articles of furniture infested with moths, a cautious application of a spray of such solutions will usually suffice. The odor will gradually disappear on exposure. Among other preparations recommended are the following:

1. *Moth Essence.*

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|---|---|
| Oil of Patchouli | 75 min. |
| Oil of Mirbane | 75 min. |
| Naphthalin | 300 grains. |
| Carbolic Acid | 300 grains. |
| Camphor | 750 grains. |
| Oil of Turpentine | 1½ fl. oz. |
| Alcohol | to make 1 quart. |

Mix, macerate a few days, and filter. Impregnate filtering paper with the liquid, put it between the substances to be preserved, in a secure box, and keep this in a *cool* place.

2. *Moth Paper.*

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|---|---|
| Naphthalin | 10 parts. |
| Carbolic Acid | 5 parts. |
| Ceresin | 5 parts. |

Melt them together, and apply the hot mass, with a brush, to unsized paper laid upon a warm surface, away from lights or fire.

3. *Moth Powder.*

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|---|---|
| Capsicum, powd | 1 part. |
| Naphthalin, fine powd | 4 parts. |
| Insect Powder | 5 parts. |

Mix. This powder is best applied by sprinkling it over paper laid between layers of fabrics, another paper being laid on top of the powder. Dieterich recommends to sprinkle it upon the fabrics (wool, etc.) themselves.

4. *Moth Species.*

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|---|---|
| Patchouli, herb | 150 grains. |
| Rosemary, flowers | 300 grains. |
| Thyme, flowers | 300 grains. |
| Sage, flowers | 300 grains. |
| Naphthalin | 300 grains. |
| Oil of Mirbane | 30 min. |
| Oil of Turpentine | 80 min. |
| Alcohol | 2 fl. oz. |

Cut the vegetable substances and mix them. Dissolve the naphthalin and oils in the alcohol, sprinkle the solution over the herbs, and place these between the articles to be preserved. (Dieterich.)

No. 2,249.—**Estimation of Mineral Wax in Beeswax** (Columbus).

Horn's method of estimating paraffin, ceresin, mineral oils, etc., in fats and waxes was published in the *Zeitsch. f. angewandte Chemie*, No. 16, of 1888. As we believe that the method will interest also many others of our readers, we publish it here in abstract.

The first step is to saponify the fat or mixture under examination. For this purpose, some 5 or 6 Gm. of the substance to be examined are put into a porcelain capsule of 6 to 10 C.c. diameter, then a piece of caustic potash or soda, about 2 to 3 Gm. in weight, is added, at all events enough to have an excess of alkali. Next 80 C.c. of absolute alcohol are added, and the whole is stirred with a glass rod, warming it meanwhile over a water-bath. All fatty substances will thus be speedily saponified, and a dry soap obtained. An addition of sand or of carbonate of sodium to the mass, when it has become mushy, is not necessary if it is only constantly stirred with the rod as soon as it gets thick. The dried soap is now introduced into a cylindrical roll of filtering paper. Most of the particles adhering to the dish may be scraped off with a spatula; the remainder may be easily removed by warm chloroform. The paper roll having been introduced into

a Soxhlet apparatus, the chloroformic solution is poured on top, and the apparatus having been properly adjusted and charged with chloroform, the contents of the roll (which is left open above) are exhausted.

The chloroformic solution of the paraffin or mineral oil is poured into a weighed glass capsule, the chloroform evaporated on a water bath, and the residue dried during two hours at a temperature of 105° to 110° C., since it obstinately retains chloroform for a considerable time.

In the case of beeswax, it must be remembered that this contains more than 50 per cent of unsaponifiable matter (myricyl-alcohol) as a natural constituent, which is soluble in chloroform. Hence a method of separating the paraffin, etc., from the myricyl-alcohol must here be added. Five or 6 Gm. of wax are saponified and treated precisely as above directed, and the final residue of myricyl-alcohol and paraffin (if this is present) boiled with acetic anhydride, which converts the myricyl-alcohol into a compound ether and dissolves it, while the paraffin collects at the surface in drops. The solution is poured upon a stout filter in a funnel, placed in a hot-water apparatus, and the paraffin, which remains on the filter, repeatedly washed, first with boiling acetic anhydride, then with water. A loss of paraffin is not to be feared. The washed paraffin and filter is then put into a small beaker, dried at 100° until the adhering water is dissipated, then dissolved in petroleum ether or chloroform, the solution evaporated in a tared capsule, and the dried residue weighed. In place of acetic anhydride ($C_4H_6O_3$), anhydrous or glacial acetic acid ($C_2H_4O_2$) may be used, but in this case the compound ether produced is apt to separate if the temperature is at all allowed to decrease.

No. 2,250.—**Prescription Query** (A. M. D.).

"Please state how the following prescription should be compounded:

℞ Potassii Chloratis..... ℥ iiss.
Quininæ Sulphatis..... gr. xl.
Syrupi Pruni Virg..... ℥ ss.
Syrupi..... ℥ i.
Aquæ..... q. s. ad ℥ iv.
M. Sig. ℥ ss. every four hours."

As the prescriber did not order any acid to bring the sulphate of quinine into solution, we assume that he wants it mechanically incorporated. Further, we have to note that the quantity of chlorate of potassium is larger than could be dissolved in an aqueous 4-ounce mixture. If there is no chance of communicating with the prescriber, we see no way out of it but to dispense the prescription with the undissolved portion suspended, to attach a *shake* label, and to give particular instructions to the recipient that this be not forgotten. In preparing the mixture, we would mix the two syrups with 2 fluidounces of water, triturate the liquid thoroughly with the chlorate of potassium and sulphate of quinine, then transfer the mixture to a graduate or 4 oz. vial, and rinse the mortar with enough water to make 4 fluidounces.

## BIBLIOGRAPHY.

THE NATIONAL FORMULARY OF UNOFFICINAL PREPARATIONS. First Issue. By authority of the American Pharmaceutical Association. Published by the American Pharmaceutical Association, 1888, pp. 176, 8vo, sheep and muslin.

THE conservative tendency of the last Committee of Revision of Publication of the Pharmacopœia has quite naturally borne fruit in the present form. Much labor has been required to prepare the 435 formulas which the book contains in a manner calculated to be acceptable to pharmacists and physicians distributed over such an enormous territory, and suited to the needs of so many widely separated localities, and it is a matter worthy of congratulation that the work has been accomplished so creditably. After the committee have gratuitously labored so long and faithfully, it is only fair that pharmacists generally should do their share to secure the adoption of the formulas by prescribers, for the benefit to be derived from an extensive sale is not the immediate pecuniary result so much as the relief of the pharmacists themselves from the necessity for carrying a stock of nearly similar articles of various manufacture. In other words, the more effort is made individually to secure the adoption of the work as a standard, the more individual benefit will be derived from it.

PTOMAINES AND LEUCOMAINES, or the Putrefactive and Physiological Alkaloids. By VICTOR C. VAUGHAN, Ph.D., M.D., Professor of Hygiene and Physiological Chemistry in the University of Michigan, etc., and FREDERICK G. NOVY, M.S., Instructor in Hygiene and Physiological Chemistry, etc. Philadelphia: Lea Bros. & Co., 1888, pp. 316, 8vo, muslin, $1.75.

PROF. VAUGHAN has probably done more than any one else in this country to advance our knowledge of this curious and important group of bodies. The work here referred to is a very successful attempt to embrace the known facts regarding them within limits which permit of their easy acquirement. There are some details which more particularly concern the physicians, but nearly everything contained in the work is of interest to chemists, and there is nothing which is not of the greatest importance as throwing light upon many obscure forms of illness. The study of the facts here presented cannot fail to exert great influence upon medical practice in the immediate future, and the medical profession especially are under many obligations to the authors for collecting, in such convenient shape, so much recent knowledge.

THE EAR AND ITS DISEASES: Being Practical Contributions to the Study of Otology. By SAMUEL SEXTON, M.D., Aural Surgeon to the New York Eye and Ear Infirmary, etc. Edited by CHRISTOPHER J. COLLES, M.D., Assistant Aural Surgeon to the New York Eye and Ear Infirmary. With Numerous Original Illustrations. New York: William Wood & Co., 1888, pp. 441, 8vo, muslin.

DR. SEXTON'S writings on the subject of aural diseases are already frequently met with in medical journals and government reports, and the materials for this volume have already in large measure appeared in the form of such scattered papers. Their collection and publication in their present form render them especially valuable. In many features this work is unlike its predecessors in this department of medical literature, and it occupies a place by itself, so that its purchaser will not be duplicating his sources of information.

MANUAL OF CHEMISTRY. A Guide to Lectures and Laboratory Work for Beginners in Chemistry. A Textbook especially adapted for Students of Pharmacy and Medicine. By W. SIMON, Ph.D., M.D., Professor of Chemistry and Toxicology in the College of Physicians and Surgeons; Professor of Chemistry and Analytical Chemistry in the Maryland College of Pharmacy, Baltimore, Md. Second edition, thoroughly revised and greatly enlarged, with forty-four illustrations and seven colored plates, representing fifty-six chemical reactions. Philadelphia: Lea Brothers & Co., 1888, pp. 479, 8vo, muslin, $3.75.

IN noticing the first edition of this work, we have already recognized its peculiar meritorious features, and a careful inspection of this greatly enlarged second edition more than justifies our former opinion. The book being specially designed for students in pharmacy and medicine, the author was enabled to confine his treatment of the subject within definite boundaries, omitting that which would only interest the general student who has to go over the whole ground of the science. The work is, of course, primarily intended to be used under the guidance of a teacher, but it is so practically arranged that it may well be used for self-study likewise. A distinguishing feature is the addition of a series of plates, showing, by colored strips, the various color-reactions of the more important metals, particularly of those which are liable to be confounded or mistaken for one another. We are so impressed with the usefulness of this feature—which we distinctly except from the class of so-called "coaching" or "cramming" aids—that we could have wished it rather more extended. In fact, we would prefer to have the plates separate from the book, perhaps best in form of a chart, on which all final color-reactions, which are capable of being illustrated, are shown. However, this idea is thrown out merely as a hint.

The work is gotten up in very handsome style, and in spite of the expense in preparing the colored plates, is sold at a very moderate price.

A TEXT-BOOK OF PHARMACOLOGY, THERAPEUTICS, AND MATERIA MEDICA. By T. LAUDER BRUNTON, M.D., D.Sc., F.R.S., etc. Adapted to the United States Pharmacopœia by FRANCIS H. WILLIAMS, M.D., Boston, Mass. Third Edition. Philadelphia: Lea Bros. & Co., 1888, pp. 1,261, 8vo, cloth, $5.50; leather, $6.50.

SINCE its first appearance, this work has rapidly become one of the most favorite text-books on its topic. We have already, in a notice of a former edition, spoken of its various features and the comprehensive manner in which its author has embraced the recent literature of pharmacology (used in its widest sense). As a hand-book for general reference respecting the knowledge of recently discovered remedies, it has no equal in our language and should be in every well-equipped pharmacist's working library. This latest addition has been considerably increased in size by additions of new matter.

THE PRESCRIPTION: Therapeutically, Pharmaceutically, and Grammatically considered. By OTTO A. WALL, M.D., Ph.G., Professor of Materia Medica and Botany in the St. Louis College of Pharmacy, etc. St. Louis, Mo., 1888, pp. 184, small 8vo, muslin.

THIS is unquestionably the most complete hand-book on the subject of prescription-writing that has yet appeared in this country, and the student of pharmacy or medicine who desires a work of the sort need not wait for something more comprehensive, as its appearance in the future is extremely improbable.

E. SACHSSE & Co. Preisliste ætherischer Oele. Leipzig-Reudnitz.